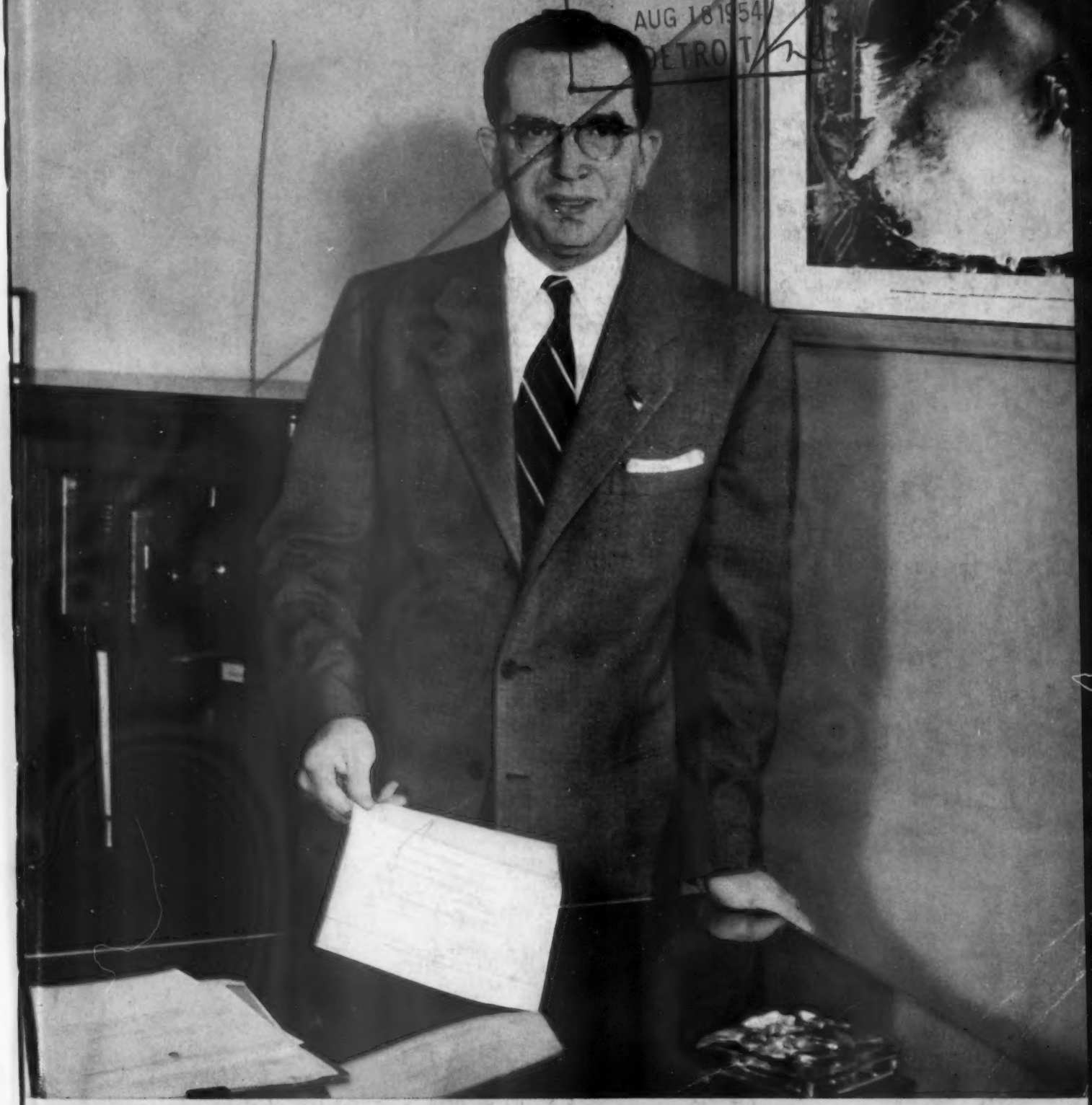
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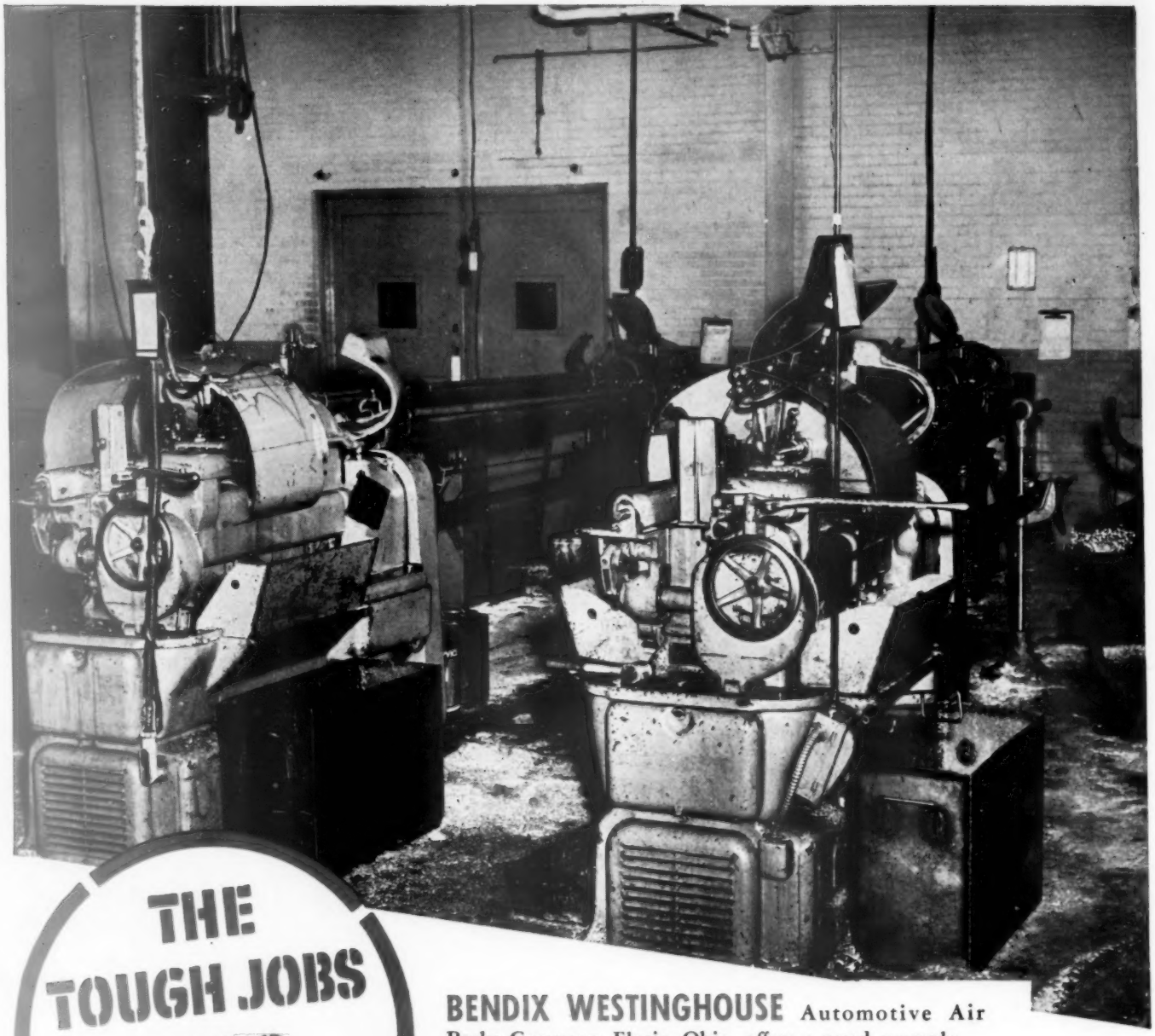
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Cover photo, FRANK E. WHYTE (See page 77)

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THE TOUGH JOBS GO TO TEXACO

BENDIX WESTINGHOUSE Automotive Air Brake Company, Elyria, Ohio, offers a good example.

Some ten years ago, a Texaco Lubrication Engineer was called in for consultation on certain cutting oil problems. As a result of following his recommendations, machine tool bearing failures virtually ceased, tool life was greatly extended and machine maintenance costs came down. These benefits have continued now for more than a decade.

Made-for-the-job Texaco Lubricants and skilled Texaco Lubrication Engineering Service are ready to go to work for *your* business—increasing efficiency and reducing costs.

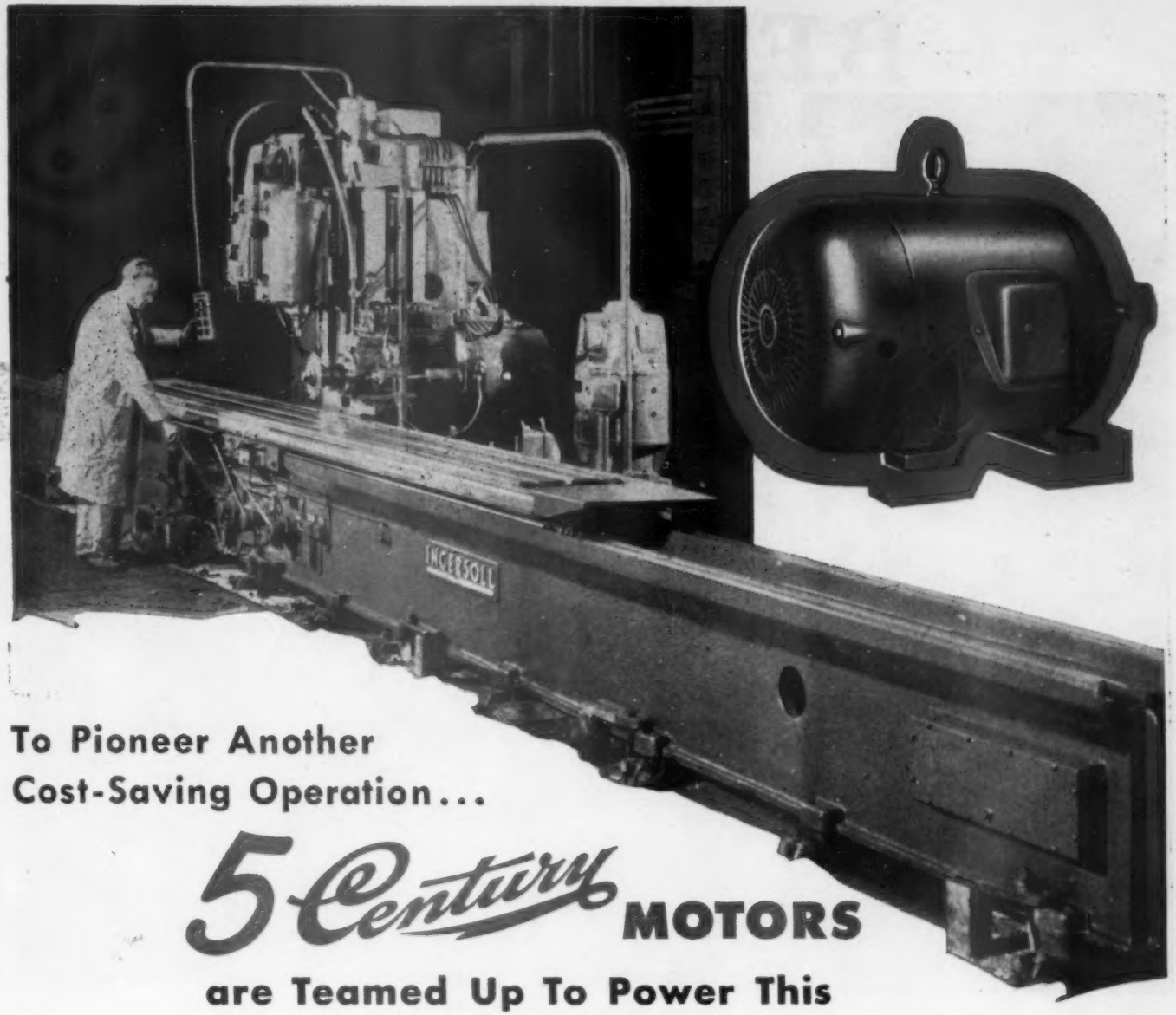
Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

TEXACO Lubricants, Fuels and Lubrication Engineering Service

For More Information Circle No. 101 on Inquiry Card—Page 17



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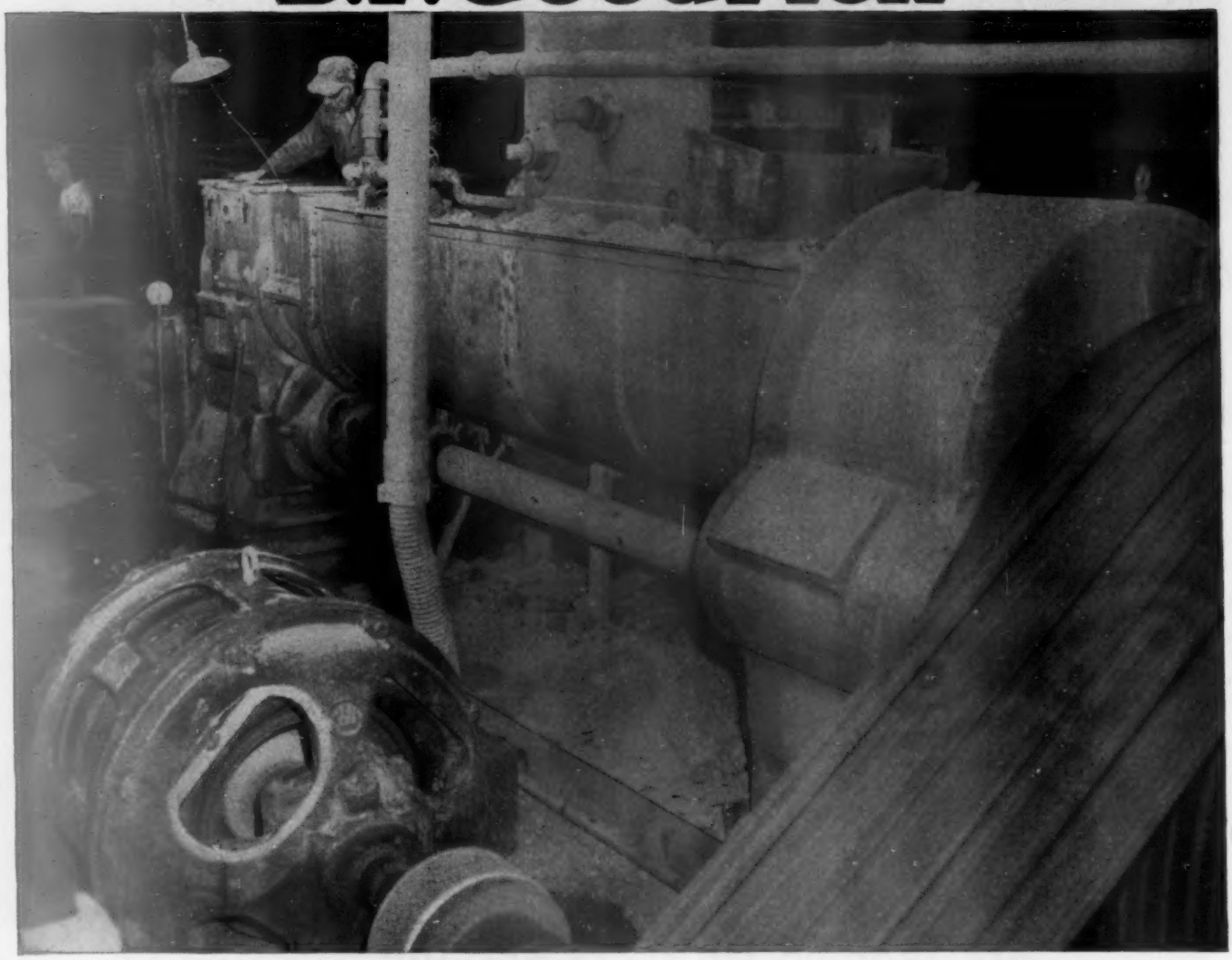
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Offices and Stock Points in Principal Cities

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RESEARCH KEEPS **B.F.Goodrich** FIRST IN RUBBER



From 10 days to two years— with B. F. Goodrich Grommet belts

SEVERAL years ago when that electric motor was rewound, it developed more horsepower than was thought possible. Then the V belts, selected by using the rating on the motor plate, couldn't pull the load. They slipped, squealed, lasted 10 days. The job was too big for 15 ordinary belts, and it would cost $300 for new belts and sheaves. Even more costly would be the several days' loss in production.

Then a B. F. Goodrich distributor studied the drive, and said that the present sheaves could be used with the new 40% stronger, high-capacity Grommet V belts. They were tried. Instead of lasting only 10 days, the fifteen high-capacity belts have been in use over two years now, and are still going strong. Here's why:

40% stronger—Only with grommet construction is it possible to increase the number of cords reinforcing a V belt and still retain flexibility and resilience. Grommets are cord loops made like giant twisted cables except that they're endless. The B. F. Goodrich high-capacity V belt carries a 40% higher horsepower rating because it's built with larger grommets, having 40% more tensile strength.

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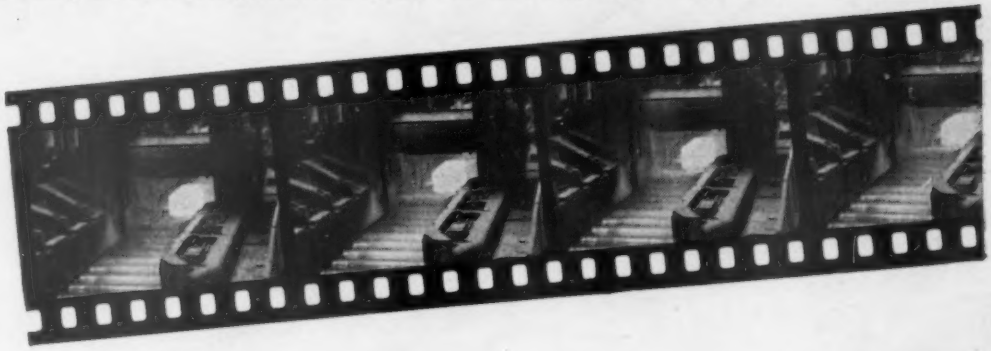
Grommet—T. M. The B. F. Goodrich Co.

B.F.Goodrich
INDUSTRIAL PRODUCTS DIVISION

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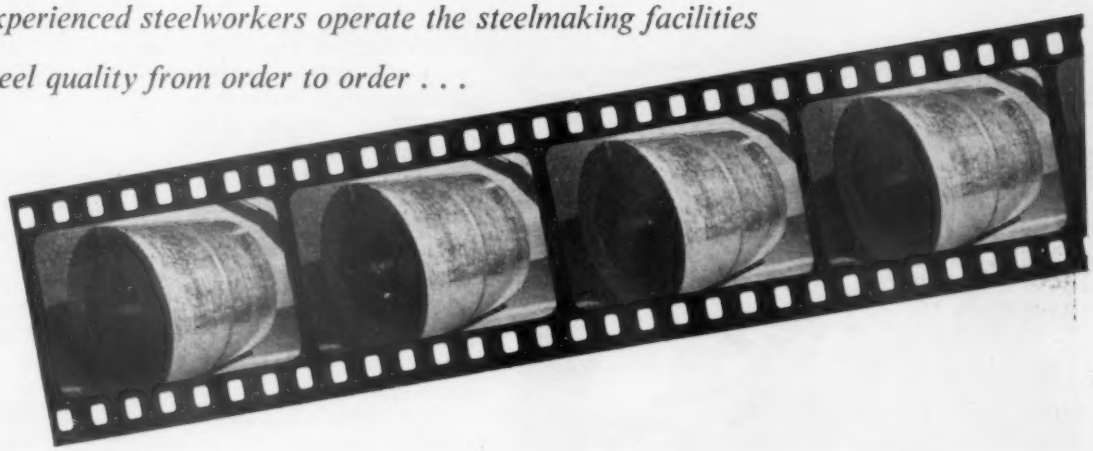
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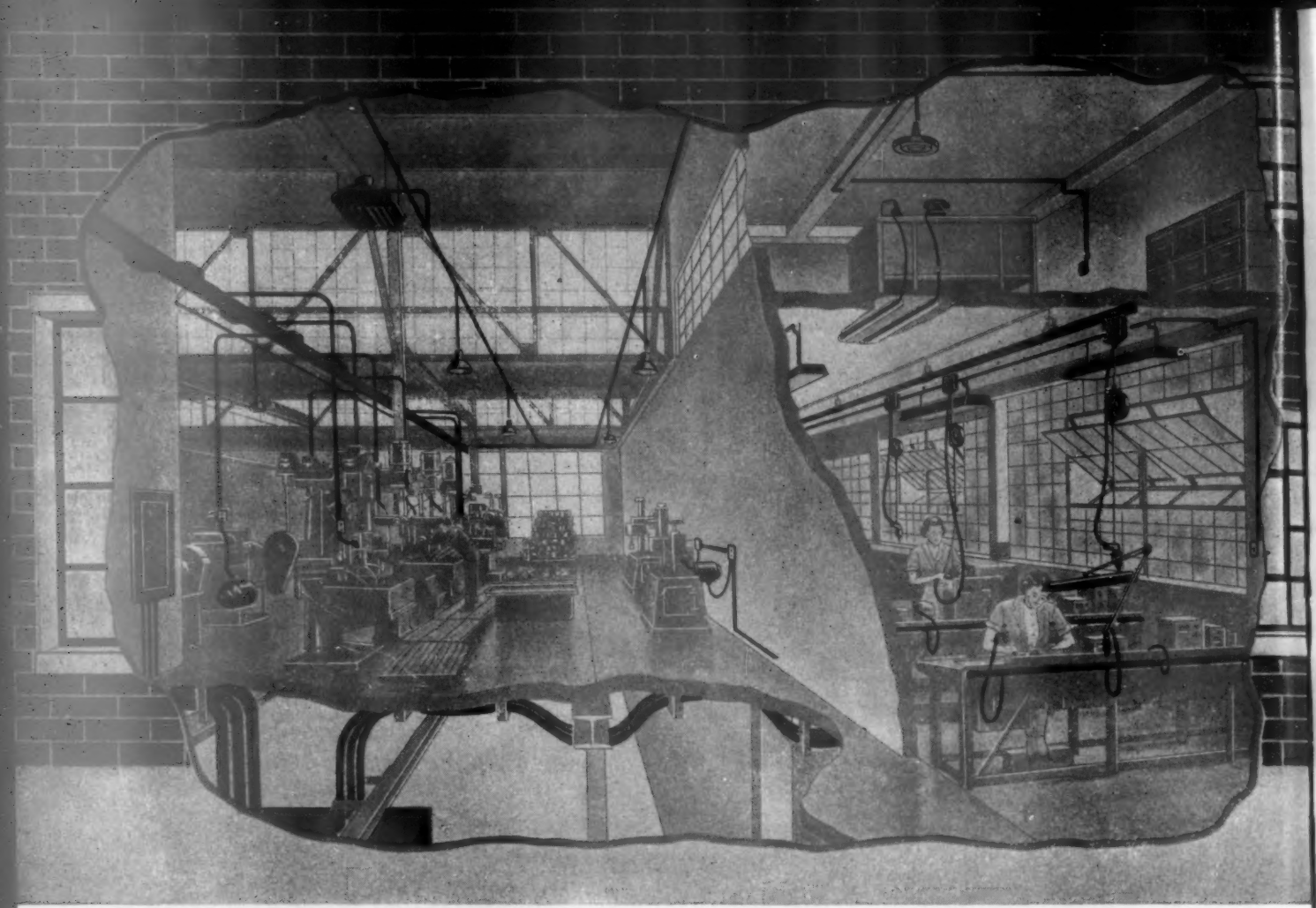
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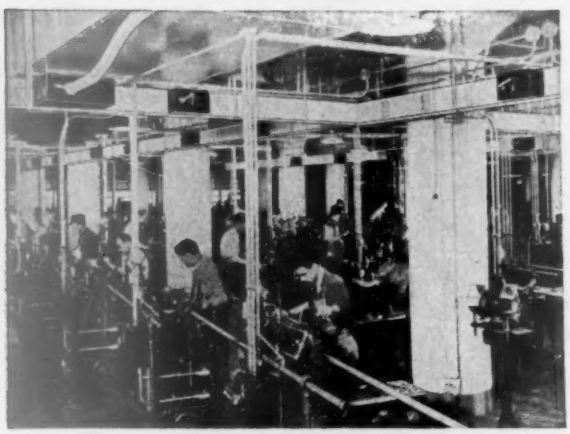
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The National Magazine of Industrial Purchasing

VOL. 37, No. 2 August, 1954

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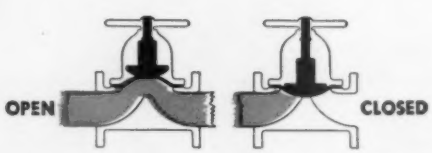
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Flanged ends — lined or unlined, ½" thru 18"
Butt weld ends — ½" thru 6"
Socket ends — ½" thru 4"

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Flanged ends — ¾" thru 6".

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Bendix-Westinghouse topworks
standard (air to close — spring to open)
Robotair, ¼" thru 1"
Rotochamber, 1" thru 4"; in tandem, 5", 6"
direct acting (spring to close — air to open)
Robotair, ¼" thru 1"
Rotochamber, 1" thru 4"
double acting (air to close — air to open)
Robotair, ¼" thru 1"
Rotochamber, 1" thru 4"
Piston operated, 6" thru 12"
Sliding stem bonnet, ½" thru 12"

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Natural rubber, neoprene, reinforced neoprene for vacuum, hycar, butyl, white gum rubber, Kel-F, Teflon, polyethylene.

Body Materials
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Flange both ends
Socket end to male hose thread end
Flange end to male hose thread end
Male hose thread both ends

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PRODUCED... SHIPPED... IN LESS THAN 8 DAYS!

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This is a typical example of the way Kaiser Aluminum operates to meet customer emergencies.

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Our record for meeting the production schedules of customers—no matter where they are located—is unsurpassed in the aluminum industry. We believe we can meet the emergency requirements of customers more often than any other basic aluminum producer.

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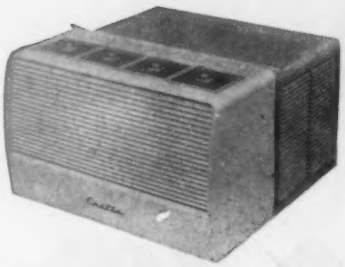
Setting the pace—in growth, quality and service

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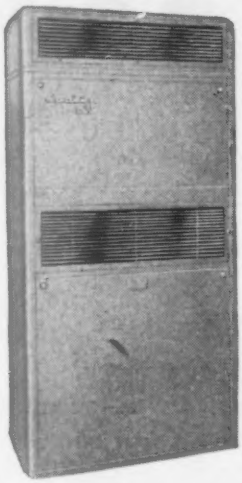
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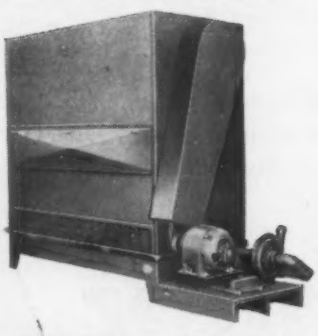
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See Curtis data in Sweets Catalog File, and write for your free copy of NEW *Curtis* Air Conditioning Manual.

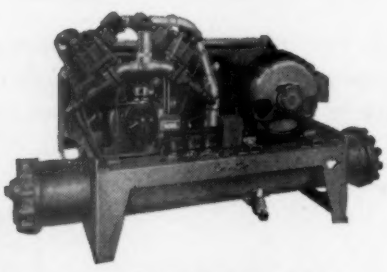
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Residential Cooling and Heating Units



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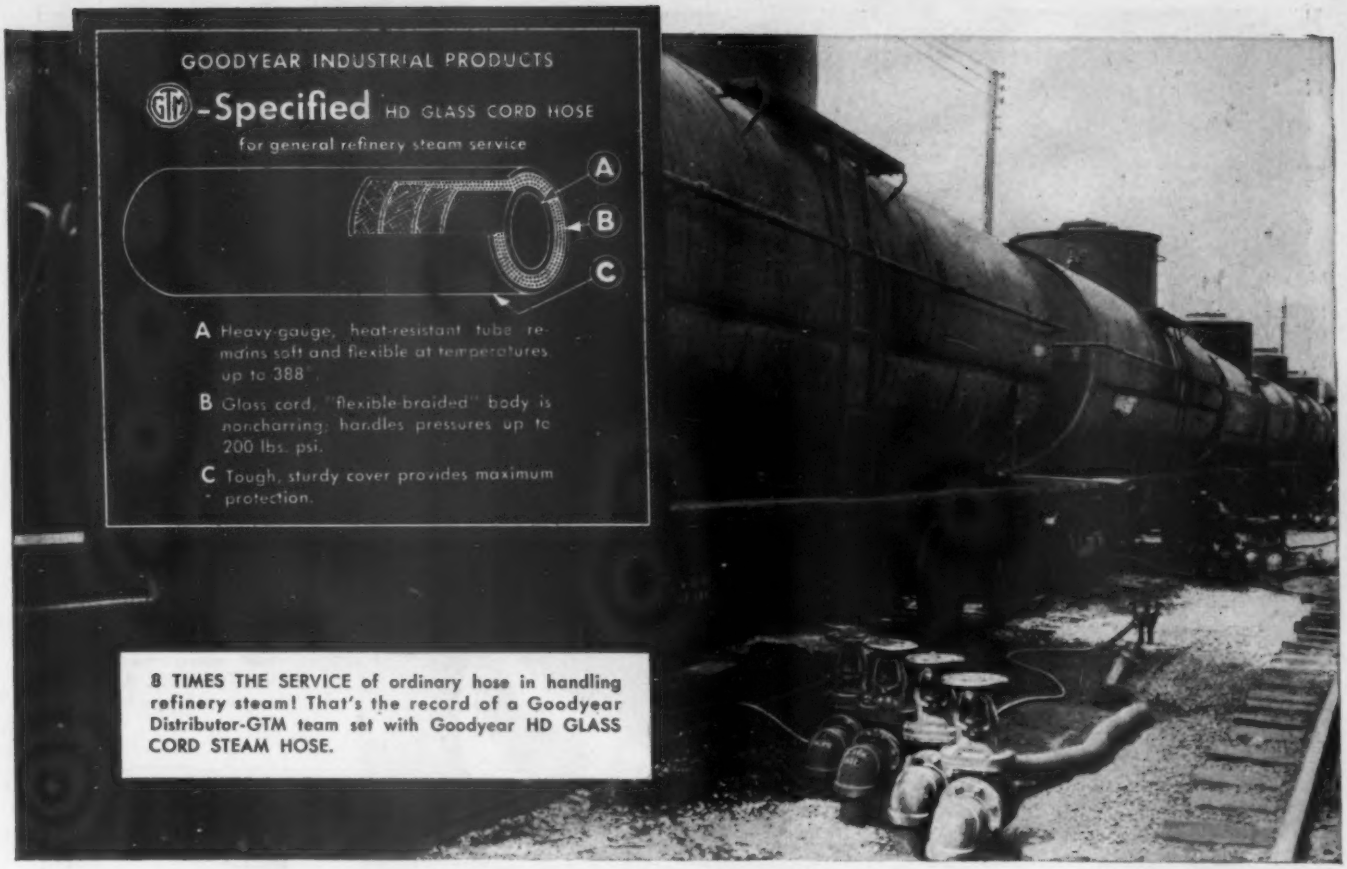
Water Cooled Condensing Units— through 80 tons

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of Curtis Manufacturing Company

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For More Information Circle No. 110 on Inquiry Card—Page 17



Best Hose For Working Under Pressure

comes from your Goodyear Distributor

To make sure the hose used in your operation can pay its own way, make sure it's quality built and right for the job. The best way to cover these two bases is to call in your Goodyear Distributor.

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The right product, the right knowledge, the G.T.M. — these are only a few of the cost-saving reasons why it pays to deal with your Goodyear Distributor. Others include tailored service, rapid delivery, simplified billings and reduced inventory. It all adds up to more service for lower, over-all cost. It's yours by consulting the Yellow Pages of the Telephone Directory or writing: Goodyear, Industrial Products Division, Akron 16, Ohio.

GOODYEAR

THE GREATEST NAME IN RUBBER

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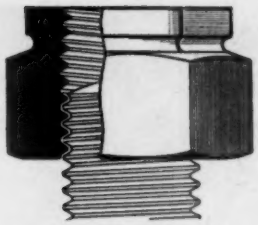


Many manufacturers use FLEXLOCS to fasten motors, compressors and other vibrating equipment to mounting plates. FLEXLOCS won't work loose . . . they eliminate costly service calls.

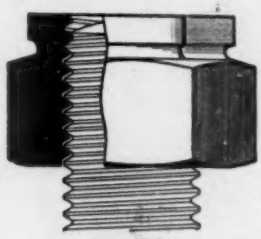
FLEXLOC locknuts reduce costly service calls

FLEXLOC locknuts do this because they stay put anywhere on a bolt as soon as their locking threads are fully engaged. Even the most severe vibration will not work them loose. FLEXLOCS offer many other advantages, too. *They are one piece.* They eliminate complicated, time-consuming methods of locking studs and bolts. They provide simpler, faster application and safer, more dependable locking than plain nuts and lockwashers, castellated nuts and cotter pins, nuts and jam nuts. They save buying, stocking and handling of extra parts. *They are all metal.* They have higher tensile strength than most other lock nuts. They permit you to stock only one nut for all temperatures to 550°F. *They are reusable.* They can be applied again and again without losing locking efficiency—a plus value in maintenance.

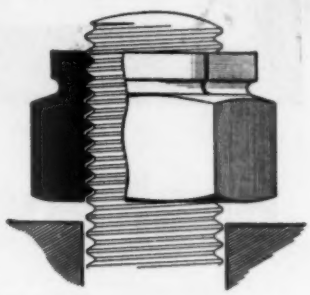
For information about FLEXLOCS and samples for test purposes, see your FLEXLOC distributor or write STANDARD PRESSED STEEL CO., Jenkintown 31, Pa.



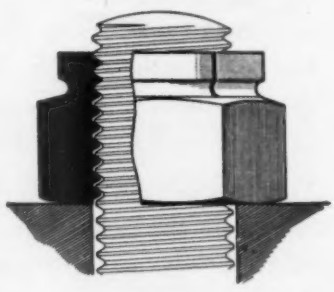
Starting. A FLEXLOC starts like any ordinary nut. Put it on with your fingers. Tighten it with a standard hand or speed wrench.



Beginning to Lock. As the bolt enters the segmented locking section, the section is expanded, and the nut starts to lock.



Fully Locked As a Stop Nut. When 1½ threads of a standard bolt are past the top of the nut, the FLEXLOC is fully locked. A FLEXLOC does not have to seat to lock.



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FLEXLOC® LOCKNUT DIVISION

SPS
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Rolling Mills and General Offices
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For More Information Circle No. 113 on Inquiry Card—Page 17

UNITED STAMPINGS

from our Pressed Products Plant



Each year thousands of different stampings in the small and medium range are shipped from our Pressed Products Plant in quantities to satisfy any needs.

Stamped — Formed — Machined — Hardened and Ground — each serving industry at its best. We aim to carry the largest and most diversified range of steel raw material in the midwest—ready to serve you.

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SCREWS · NUTS · WASHERS
CLUTCH HEAD SCREWS
STAMPINGS

United Screw and Bolt Corporation

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For More Information Circle No. 114 on Inquiry Card—Page 17



WASHINGTON REPORT

for purchasing agents

ADJUSTMENTS CONTINUE

Trend of cautious adjustment in the economy continues, with the Government bending its efforts toward keeping the dip at a level where it does not hurt too much.

Industry has been working down its inventories. In steel this has been going on for a year—with the steel industry producing 70% of capacity.

But the cuts in inventory are general. With supplies assured, working inventory levels can be reduced. Also not to be overlooked is the fact that with some exceptions, industrial production is at a lower level. This takes the whole economy down a peg or two.

* * *

CONCENTRATION OF PRODUCTION

Factors which are cutting down the level of demand for industrial products are the lower rate of defense production and the absence of any speculative push in buying. This applies to consumers as well as to purchasing agents.

There is neither the likelihood of scarcity, nor any special price inducement to buy. In fact, there is a general anticipation that prices will be lower.

Concentration of production in the most efficient plants will bring some economies in production. This will allow some price cutting.

* * *

BALANCED ECONOMY

Effort of the Administration is to bring a better balance into the economy—to scale down the level of farm prices to a point where farm surpluses do not continue to build up—also to get rid of some of the hoard of surpluses which have already been accumulated because of the high price support levels.

On the industrial side, the shoe is on the other foot. The Administration wants to keep domestic producers in business. Lead and zinc industry has been unable to compete, and the Government is supporting the industry by buying these metals for the strategic stockpile.

Question of how to achieve free markets when price support devices are used in every level of trade and commerce continues to puzzle both Government officials and the business community.

Trend is toward keeping the Government in the picture to bring stability and balance into the markets, but to inject industry and private ownership into as many activities as possible.



There goes the profit on how much production!

Here's a familiar sight—a mechanic repairing a valve—a routine maintenance job. Maybe the cost is only forty or fifty dollars. But even that represents the profit on how much of your production?

Spread out through the year, made up of many jobs, the big impact of excessive piping maintenance is sometimes missed. It's there nevertheless, and, of course, you pay for it. You can't avoid maintenance, but you can control it.

Thrifty buyers don't wait for complaints of high piping costs. They protect against them with Crane quality—the traditional quality standard in valves and fittings, and the best assurance of low-cost, dependable service.

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VALVES • FITTINGS • PIPE • PLUMBING • HEATING

For More Information Circle No. 115 on Inquiry Card—Page 17

CONSTRUCTION BOOMING

Example of how completely the Government is tied into industry is that of the construction industry. This industry is booming. Houses are being built at near record levels. Commercial building, roads and highways, utilities—these are all going ahead at all-time record levels.

Total construction for this year is likely to be at an all-time record high in terms both of dollars spent and of actual physical construction.

In the building industry, the Government is in the business at practically every level of operation. In public works, the Federal, State and municipal governments are obviously the whole picture.

Roads, highways, bridges, streets—again wholly a Government operation.

The Government guarantee of mortgages is recognized as the mainstay of home building. So-called public housing, while limited in importance, is wholly a Government operation.

In commercial construction, the Government credit and tax policies have a direct bearing, while on industrial construction, the tax amortization policies have been a potent factor in the volume of such construction.

* * *

GOVERNMENT SUPPORTS

In view of this broad and overriding participation by Government in the building industry, it is unrealistic to expect the Government to bow out-nor will it bow out in other areas where Government action now vitally affects business.

Question then revolves around where the greatest Government emphasis will be, and how it will be used.

In the matter of money and credit, the Government will seek to keep the money supply ample-easy money, cheap credit . . . . this despite the general idea that the Administration is supposed to stand for ""hard'' money.

Facts are that to move a large volume of gross national product requires a large volume of money and credit.

Currently, the Federal Reserve Board is cutting the amount of funds which the banks have to hold in reserve to back up their deposits. This means that the banks have more money available for lending--making credit easier, and bringing interest rates down.

* * *

CREDIT EASED

For all the easing in credit, there still are indications that the volume of industrial production will continue to drop off.

The construction industry, which has been a mainstay while other industries have adjusted to a lower rate, will itself adjust to a lower rate on a seasonal basis this fall and winter.

Automotive industry has gone through the peak in its selling season, and a lower level of demand is usual in the fall and winter months.

* * *

EMPHASIS ON RESEARCH

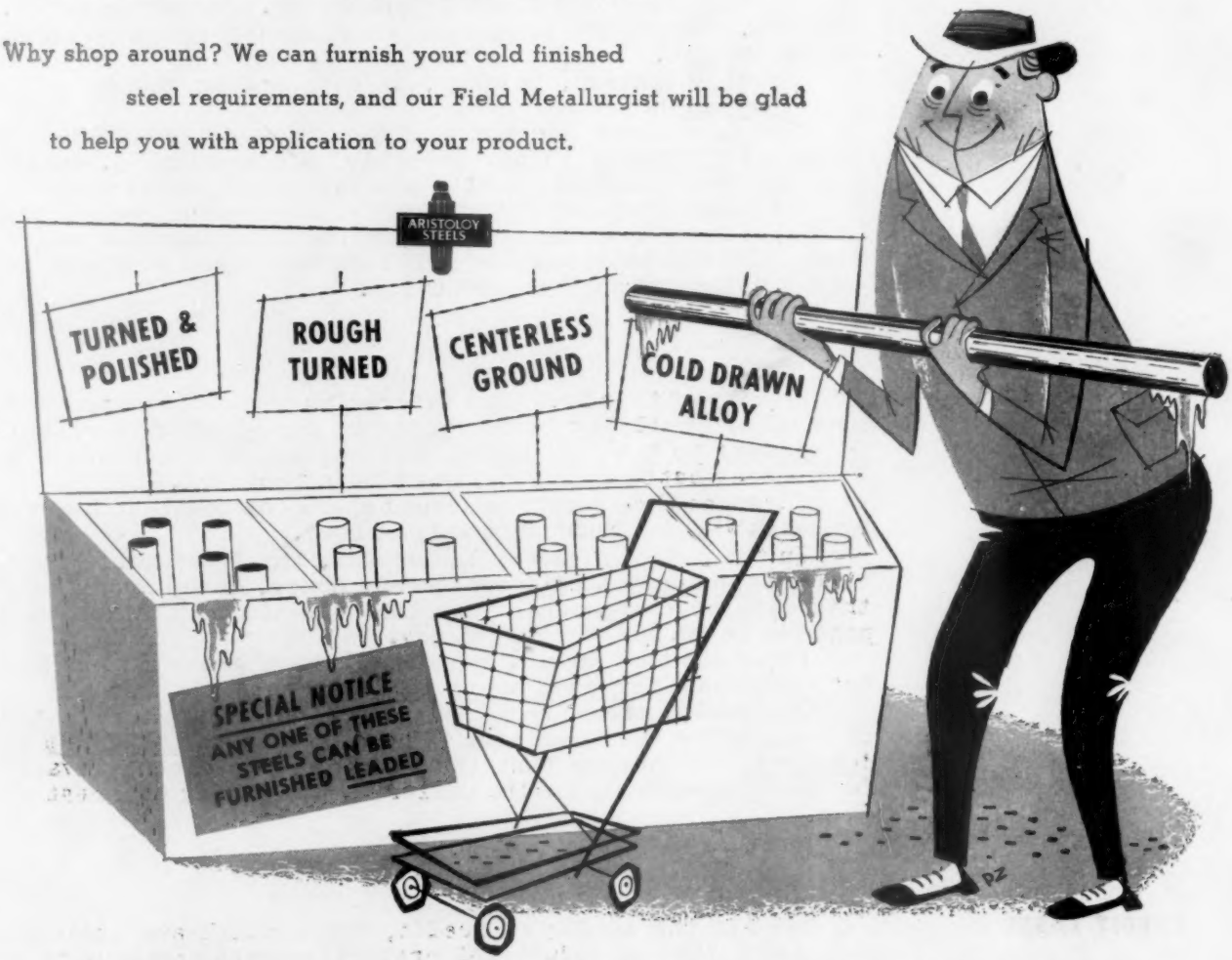
Despite these negative factors, there is an overall optimism for the longer term— adjustments made now will become a springboard for sharper surges upward in the economy.

This is not based on the expectation of war. Most of the optimism stems from the fact that industry has invested large sums in research—in product design—in improved production techniques—and that this will pay off.

COLD FINISHED
... how do you want it?

Rounds or hexes—regular carbon and alloy grades—cold drawn, rough turned, turned and polished, or centerless ground—annealed or heat treated ... cold finished Aristoloy can be furnished any way you want it. And for faster machining, longer tool life, and better finish, Aristoloy can be leaded in any of the standard A.I.S.I. or S.A.E. standard analyses.

Why shop around? We can furnish your cold finished steel requirements, and our Field Metallurgist will be glad to help you with application to your product.



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For More Information Circle No. 116 on Inquiry Card—Page 17

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NEW INFORMATION FOR YOUR

Catalog Files



ABRASIVES

Illustrated, 8-page booklet describes the use of coated abrasives for grinding and finishing non-ferrous metals, with lower unit costs, greater safety and less fatigue for the operator.

Minnesota Mining & Mfg. Co.

Circle No. 1 on Inquiry Card—Page 17

AIR GAGES

Catalog No. 613 (30-pages) covers the various types of CompAIRator units, as well as illustrating many inspection problems solved by air gaging. Also included are other standard units.

Taft-Peirce Mfg. Co.

Circle No. 2 on Inquiry Card—Page 17

BRUSHES (POWER DRIVEN)

Sixteen pages of facts, application and product data on power driven brushes for de-burring, stripping, finishing, polishing, removing rust, scale, etc. are given in illustrated catalog.

C. W. Morris Co.

Circle No. 3 on Inquiry Card—Page 17

CARBON STEEL

Buyers of semi-finished hot rolled carbon steel, bars and skelp will be interested in Form SD-1353 which lists the sizes of these products the company is equipped to roll in various plants.

Republic Steel Corp.

Circle No. 4 on Inquiry Card—Page 17

CAST IRON (DUCTILE)

A recently developed family of irons with the process advantages of cast iron and the engineering properties of cast steel are discussed in bulletin DI-1 (12 pages with illustrations & charts).

International Nickel

Circle No. 5 on Inquiry Card—Page 17

CHAINS & SLINGS

Complete data on sizes, specifications, link dimensions, standard finishes, etc., of specific grades of fire welded wrought iron chains in 3/8" diam and larger may be found in bulletin C.

The McKay Co.

Circle No. 6 on Inquiry Card—Page 17

COMPRESSORS, VACUUM PUMPS

The operation and construction of single-stage water-cooled rotary compressors are described in 12 page bulletin, No. 16B8126. Units are applicable to every air or gas handling job.

Allis-Chalmers Mfg. Co.

Circle No. 7 on Inquiry Card—Page 17

CONTROL EQUIPMENT

A full line of steam and liquid control equipment form the subject of Catalog No. 54. Products shown include pressure, temperature regulators or both combined, strainers & valves of all types.

O. C. Keckley Co.

Circle No. 8 on Inquiry Card—Page 17

COUNTERBORES

Full information on standard, hand-detachable counterbores may be found in bulletin 60446. Booklet describes and shows sizes of holders, counterbores, countersinks and pilots.

Ex-Cell-O Corp.

Circle No. 9 on Inquiry Card—Page 17

DRILLING MACHINES

Over-all features of the Cleereman round column & box column drilling machines are stated in catalog No. 600. There are large-size illustrations and concise descriptive matter.

Bryant Machinery & Engineering Co.

Circle No. 10 on Inquiry Card—Page 17

DRYER & COOLER

The "Roto-Louvre", an effective dryer, cooler or dryer-cooler, is covered in a 20-page book, No. 2511. It shows how this unique machine can process hundreds of different products.

Link-Belt Co.

Circle No. 11 on Inquiry Card—Page 17

ENGINEERED PRODUCTION SERVICE

A well-illustrated booklet contains twenty examples of engineered production service for small lot, long run and special high production work with multiple tooling.

Sundstrand Machine Tool Co.

Circle No. 12 on Inquiry Card—Page 17

ENGINEERING MANUAL

An illustrated "Engineering Manual" gives detailed information on cost-cutting tooling and machines. Included are drilling machines, drill heads, broaches, collets, chucks, etc. Featured is a gearless drill head.

Zagar Tool, Inc.

Circle No. 13 on Inquiry Card—Page 17

ELECTRIC FORK TRUCKS

Full exploration of an elecrtic fork truck line forms the subject of "Electri-Facts," a 16-page illustrated brochure. Fork truck attachments from overhead guards to snow plows are discussed.

Clark Equipment Co.

Circle No. 14 on Inquiry Card—Page 17

GRINDERS

Precision cylindrical grinders are fully treated in a 28-page catalog. Illustrated are universal, plain, roll, centerless and special purpose grinders for cranks, cams, valves and such parts.

Landis Tool Co.

Circle No. 15 on Inquiry Card—Page 17

HEAT EXCHANGER TUBES (ALUMINUM)

The complete story on aluminum heat exchanger tubes, emphasizing factors that combine low cost and corrosion resistance to make them attractive to industry, is given in new booklet.

Aluminum Co. of America

Circle No. 16 on Inquiry Card—Page 17

HEAT TREATED COLD FINISHED STEEL

A new booklet describes with pictures a method of heat treating cold finished steel bars, utilizing an electric induction heating and quenching machine. Advantages of method are listed.

Jones & Laughlin Steel Corp.

Circle No. 17 on Inquiry Card—Page 17

HEATING UNITS

Complete data on heaters, thermostats and snap switches for the users of industrial electrical units are contained in booklet, B-6161. Strip and forced convection air heaters, etc. are covered.

Westinghouse Electric Corp.

Circle No. 18 on Inquiry Card—Page 17

HOBS

A catalog just released lists over 2,000 cutter, broaches and special tools available for making a wide variety of gears, splines and racks.

Brad Foote Gear Works

Circle No. 19 on Inquiry Card—Page 17

JIG & FIXTURE COMPONENTS

An expanded line of standard jig and fixture components is described and illustrated in an 86-page catalog. Among new items included are plain fixture keys, heavy duty jacks & speed handles.

Lodding Inc.

Circle No. 20 on Inquiry Card—Page 17

MATERIALS HANDLING

Over forty types of trucks, special trucks, tote boxes, dolly trucks, trays, baskets, barrels, roving cans, etc. are described and illustrated in catalog No. 54. Units are mostly vulcanized fiber.

National Vulcanized Fiber Co.

Circle No. 21 on Inquiry Card—Page 17

MATERIALS HANDLING (PUMPING)

Catalog 35-12 in 32 pages gives a full description of the "Versatal" materials pumping line. The nature and function of such equipment is fully explained with application examples.

Alemite Div., Stewart-Warner Corp.

Circle No. 22 on Inquiry Card—Page 17

PLASTICIZERS

A 66-page illustrated folder provides an informative reference textbook on plasticizers. A gate-folded table presents data on physical properties and specifications with comparisons.

Monsanto Chemical Co.

Circle No. 23 on Inquiry Card—Page 17

PLUG VALVES

Engineering information, including principal dimensions, types of control, metals, lubricants, etc., is supplied on plug valves in a 24-page reference book No. 39-5. Valves are full-port or venturi.

Homestead Valve Mfg. Co.

Circle No. 24 on Inquiry Card—Page 17

PUMPS

Basic information and specifications covering a complete line of pumps, compressors, and pneumatic equipment widely used in industry has been compactly arranged in bulletin GP-100.

Gardner-Denver Co.

Circle No. 25 on Inquiry Card—Page 17

RESINS (FLUOROTHENE)

A digest of the latest information about fluorothene resins is presented in a 16-page booklet, with graphs and tables. Their versatile applications in industry are comprehensively covered.

Bakelite Co.

Circle No. 26 on Inquiry Card—Page 17

Circle Card Opposite Page 17
to Obtain These Catalogs
Additional Catalogs on Page 20



This simple idea saves money in V-Belt Costs

You can prove it in two minutes!

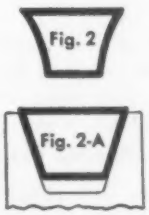


To prove how the CONCAVE SIDES of GATES VULCO ROPES *save money,* just make this simple test—

Bend *any* V-Belt that has *straight sides* (Fig. 1) and—as the belt bends—*feel* the sides *bulge out* (Fig. 1-A). This out-bulge concentrates the wear at the points shown by arrows—and this naturally shortens the life of a *straight-sided* belt!

Now bend a Gates Vulco Rope with CONCAVE SIDES (Fig. 2)

(U. S. PAT. 1813698)



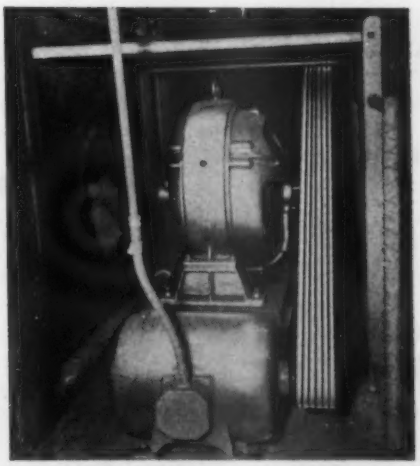
You find that the CONCAVE SIDES *fill out* and become perfectly straight. They thus press *evenly* against the V-pulley. All wear is distributed *uniformly* across the *full width* of the GATES VULCO ROPE—and this means *longer* belt *life* and *lower* belt *cost* for you!

When you buy V-Belts, be sure to get the V-Belt with the CONCAVE SIDES—the GATES VULCO ROPE!

VULCO ROPE DRIVES

THE GATES RUBBER COMPANY
DENVER, U.S.A.

Gates Engineering Offices and Jobber Stocks are located in all industrial centers of the United States and Canada, and in 70 other countries throughout the world.



Typical Gates Vulco Rope Drive—the Gates V-Belts are built with Concave Sides to insure longer belt wear.

CS-549

For More Information Circle No. 117 on Inquiry Card—Page 17

RESIN (VINSOL)

A thirty-two page booklet technically discusses how low-price Vinsol resin may be used to reduce the cost of phenol-formaldehyde resins. It gives up-to-date information on its use as an extender.

Hercules Powder Co.

Circle No. 27 on Inquiry Card—Page 17

SCREWS (SET)

Catalog No. 19 is a 24-page book devoted entirely to description, technical data, prices and reference information on set screws, both conventional and self-locking types.

Set & Screw Mfg. Co.

Circle No. 28 on Inquiry Card—Page 17

SCREWS (WOOD)

In addition to a standard line of wood screws, a twelve page catalog, just released, shows also drive screws, hanger bolts, knob screws and dowel screws.

Southern Screw Co.

Circle No. 29 on Inquiry Card—Page 17

SITTING

A gaily illustrated 12-page booklet discusses the importance of proper seating arrangements as a factor in production efficiency. Correct types of seats for different jobs are shown.

Standard Pressed Steel Co.

Circle No. 30 on Inquiry Card—Page 17

SHORT CIRCUIT PROTECTION

Motor starters having short circuit protection for 2200-5000 v systems are described in booklet No. 1062. There are photographs of indoor and outdoor circuit protective installations.

The Electric Controller & Mfg. Co.

Circle No. 31 on Inquiry Card—Page 17

STEEL CASTING

A brochure, with 8½" x 11" page size and lithographed in two colors, treats of the entire process of steel casting manufacture from the design and engineering phase to final application.

Lebanon Steel Foundry

Circle No. 32 on Inquiry Card—Page 17

TORCHES

All about air-gas torches may be gleaned from Form 8, a 35-page illustrated booklet. It illustrates and describes the majority of the torch types and sizes used in the air-gas torch fields.

National Welding Equipment Co.

Circle No. 33 on Inquiry Card—Page 17

TRANSFORMERS, REACTORS, FILTERS

Catalog A presents a complete line of transformers for laboratory and replacement purposes. Each of the lines described is distinguished by individual characteristics suiting items to application.

United Transformer Co.

Circle No. 34 on Inquiry Card—Page 17

TROLLEY BUSWAY ELECTRIFICATION

A 60-ampere steel-enclosed trolley busway electrification system is covered in a 40-page bulletin No. 45. Also included are the new 20-ampere trolley and other new items.

Feedrail Corp.

Circle No. 35 on Inquiry Card—Page 17

TUNGSTEN ARC WELDING (HELIWELD)

Features of the Heliwelding process and the equipment used with it are covered in detail in catalog, ADC 7098. The booklet tells how each piece of equipment operates and work suited.

Air Reduction Sales Co.

Circle No. 36 on Inquiry Card—Page 17

WELDING DESIGN

A fully illustrated, manual, entitled Manual of Design and Welding Engineering, contains detailed instructions upon joint design with many drawings showing contrast between good and bad designs.

Eutectic Welding Alloys Corp.

Circle No. 37 on Inquiry Card—Page 17

WELDER

Complete data on a line of air-operated bench press welder for spot welding are contained in bulletin 2100. It describes the 5, 10, 20 and 30 kva machines for high production.

Universal Welder Corp.

Circle No. 38 on Inquiry Card—Page 17

WIPER QUALITY CHART

By means of the coyprighted chart, twenty-one basic types of cloths are scientifically analyzed and compared with regard to their important wiping qualities: absorbency, softness, etc.

Charles Besky & Sons, Inc.

Circle No. 39 on Inquiry Card—Page 17

WIRE ROPE

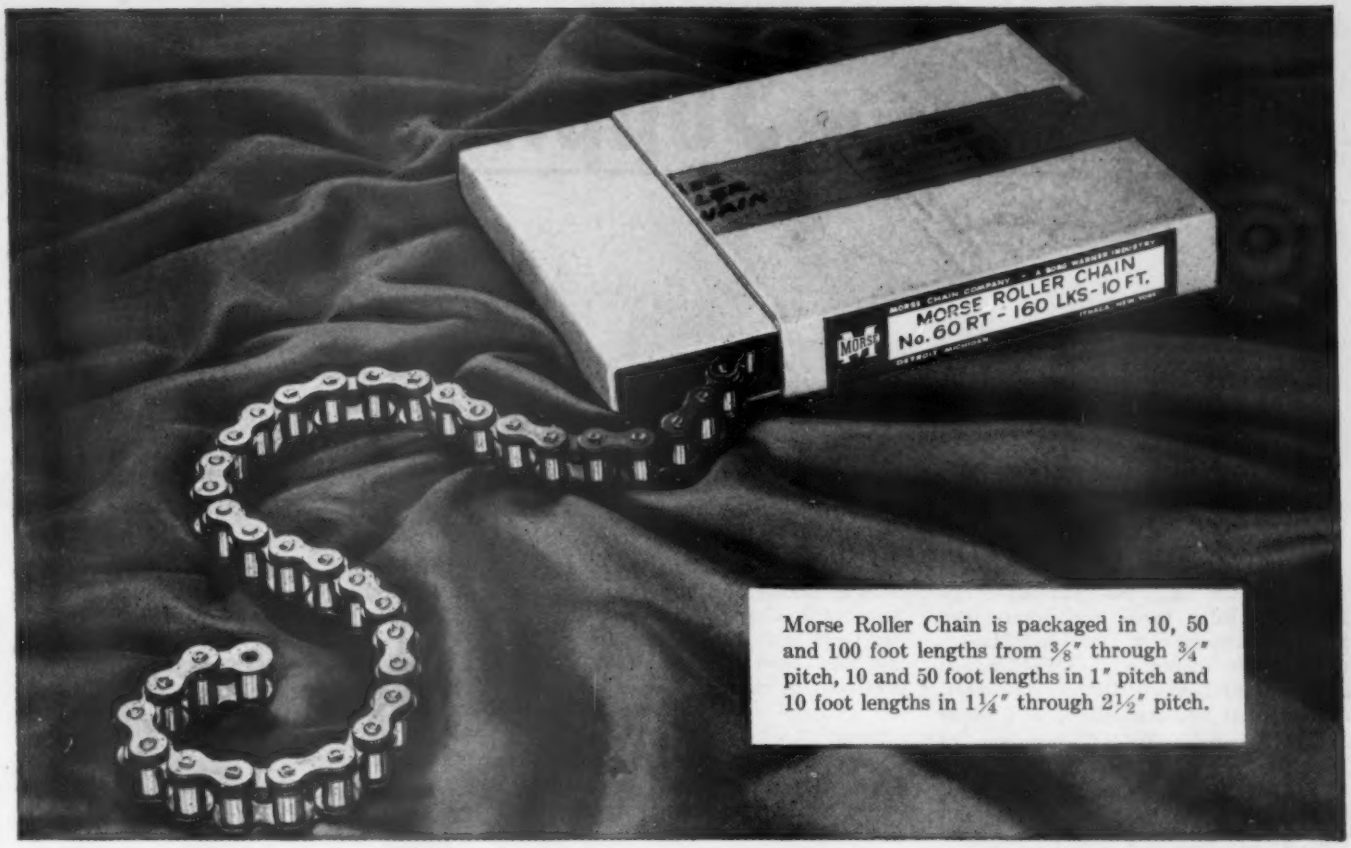
Catalog divided into 16 sections, one for each of the major industries using wire rope, gives detailed information on wire rope for specific requirements and how to order by codings.

John A. Roebling's Sons Corp.

Circle No. 40 on Inquiry Card—Page 17

Circle Inquiry Card Opposite Page 17

to Obtain These Catalogs



Morse Roller Chain is packaged in 10, 50 and 100 foot lengths from ⅜" through ¾" pitch, 10 and 50 foot lengths in 1" pitch and 10 foot lengths in 1¼" through 2½" pitch.

End stockroom confusion this easy way!

When you specify packaged Morse Roller Chain and Chain Parts, you end the time-consuming job of groping through bulk stocks in order to get the exact chain or part you need.

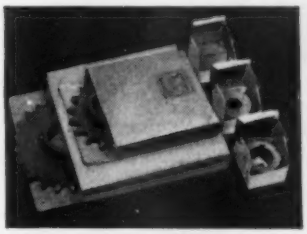
For Morse packaging permits easier, neater storing and helps prevent accidental damage. The packaged roller chain and parts are clearly identified with labels, indicating size and quantity, which noticeably reduce time spent taking inventory.

In addition to reducing handling problems and costs, Morse packaging maintains the fine precision of your roller chain and parts by guarding them from dirt, dust and corrosion. They stay clean until you are ready to use them.

And, of course, the reputation of Morse products for long service life and low maintenance costs speaks for itself.

Next time, order packaged Morse Roller Chain and Parts from your local Morse Distributor.

MORSE CHAIN COMPANY
7601 CENTRAL AVENUE • DETROIT 10, MICHIGAN



Morse Taperlock Sprockets
Prompt delivery—no reboring, keyseating. Bushings permit close mountings. No flanges, collars, or protruding heads. Painted, boxed.



Morse Packaged Parts
Coupler, Connecting, Roller, Offset links are also boxed for quick identification, easy handling. Packaged in various quantities to suit your immediate needs.

MORSE
MECHANICAL POWER TRANSMISSION PRODUCTS

FOR 24 REASONS, MASTERS OF MECHANICAL POWER TRANSMISSION SINCE 1893

1 STANDARD ROLLER CHAINS	2 HIGH-ENDURANCE ROLLER CHAINS	3 SPRING-LOCK ROLLER CHAINS	4 ROLLER CHAIN SPROCKETS	5 TAPER-LOCK SPROCKETS	6 DOUBLE-PITCH ROLLER CHAIN DRIVES	7 CABLE CHAIN	8 ATTACHMENT CHAINS	9 SILENT CHAINS	10 SILENT CHAIN SPROCKETS	11 HY-VO DRIVES	12 AUTOMOTIVE TIMING CHAIN DRIVES
13 FLEXIBLE ROLLER CHAIN COUPLINGS	14 FLEXIBLE SILENT CHAIN COUPLINGS	15 MORFLEX COUPLINGS	16 MORFLEX RADIAL COUPLINGS	17 MORFLEX & RADIAL DRIVESHAFTS	18 MARINE COUPLINGS	19 OVER-RUNNING CLUTCHES	20 OVER-CENTER CLUTCHES	21 PULLMORE CLUTCHES	22 TORQUE LIMITER	23 CENTRIFUGAL CLUTCHES	24 VARIABLE SPEED CONTROLS

For More Information Circle No. 118 on Inquiry Card—Page 17

NEWS OF YOUR Suppliers



Hanson - Van Winkle - Munning Co., Matawan, N. J., has expanded its Michigan sales force and announced new appointments in Ohio and Massachusetts. In Michigan, H-VW-M added C. M. Knights to its Detroit area staff as a special representative, and made J. D. Kershaw district manager of Michigan. At the same time, Calvin E. A. Solla became district manager of Ohio, and Hilton M. Smith joined the Boston area staff as a sales representative.

Robert F. Fox, district engineer for the **Eutectic Welding Alloys Corp., Flushing, N. Y.**, has been promoted to district manager. He will now supervise the five boroughs of New York City and Nassau, Suffolk and Westchester counties in New York, as well as Union and Hudson counties in New Jersey.

Roy J. Keller is executive vice president in charge of all operations of **Tel-Autograph Corp., New York City.** He has been with TelAutograph since 1924 and has been in New York as vice president in charge of sales since 1948.

Owen Ford, James McKinney and George Tweed have been assigned sales engineer territories by the Welding Products Division of the **A. O. Smith Corp., Milwaukee.** Mr. Ford will be located in Birmingham and will cover Alabama, Tennessee, Mississippi, Georgia and Florida. Mr. McKinney will headquarter in Los Angeles and cover the southern part of California. Mr. Tweed, who will be in Chicago, is to cover northern Indiana and Gary.

The Aluminum Company of America, Pittsburgh, has appointed William C. Woodward as manager of forging sales. He will headquarter in Cleveland.

Matthew J. Delehaunty has been appointed manager of commodity sales for the mechanical goods division,



M. J. Delehaunty

United States Rubber Co., New York City. Formerly manager of industrial sales, Mr. Delehaunty will combine the functions of both offices in his new post.

The Jeffrey Mfg. Co., Columbus, Ohio, announced the election of J. E. M. Wilson as vice president in charge of sales. In addition, A. R. Anderson was made general manager of sales for the Mining Division while Lincoln Kilbourne was named general manager of sales, Conveyor Division, and J. B. Naughton, general manager of sales, Special Products Division.

Four appointments involving general department personnel have been announced by the **Graybar Electric Co., New York City.** L. W. Taylor, general outside construction sales manager, has been made general power apparatus and outside construction sales manager following the appointment of B. P. Van Inwegen as manager at Baltimore. R. C. Dunn, sales manager of rural lines department in Chicago, has been named manager, power apparatus sales, and A. J. Haeger has succeeded Mr. Dunn as sales manager of the rural lines department.



H. M. Harper, president, (right) of the H. M. Harper Co. picks an item off the shelf at the company's new warehouse in Mamaroneck, N. Y. In addition to providing better service on stock items for customers in the New York area, special machining operations can also be handled locally. Major manufacturing operations for this leading producer of non-ferrous hardware will still be done at the main plant in Morton Grove, Illinois.

Another ROCHESTER PRODUCTS ACHIEVEMENT



Records show that in 1953
Rochester Products built and sold enough
completely formed GM Steel Tubing Condenser Coils to equip
MORE THAN HALF of all the household refrigerators
that were sold in the U.S.A. during that year.
Here is evidence that GM steel Tubing is helping
more and more refrigeration manufacturers to build
better products, faster, for less money.
Why not let us do the same for *you!*

SEND FOR *FREE* BROCHURE
This new, illustrated, fact-packed brochure tells how GM Steel Tubing can help solve design and production problems. Send today for your free copy.



SEE SWEET'S PRODUCT DESIGN FILE 1a/Ro

RP STEEL TUBING

ROCHESTER PRODUCTS *DIVISION OF GENERAL MOTORS*
ROCHESTER, N. Y., U. S. A.
ALSO MANUFACTURERS OF ROCHESTER CARBURETORS AND ROCHESTER CIGAR LIGHTERS
For More Information Circle No. 119 on Inquiry Card—Page 17

Frank W. Ladky, district sales manager in Milwaukee for **Alleghany Ludlum Steel Corp., Pittsburgh,** has been appointed assistant to the president.



F. W. Ladky

Mr. Ladky has represented the firm in Wisconsin for the past 34 years. Succeeding him at Milwaukee is David L. Garlick, who has been in the office since he joined the company in 1936.

Culberg Asbestos and Cork Co., Chicago, has been appointed a distributor of Fiberglas Industrial Insulations by **Owens-Corning Fiberglas Corp., Toledo.**

Air Express International Corp. has moved its executive offices from 44 Whitehall Street to 90 Broad Street in New York City.

R. W. Lahey, Jr., has been named sales manager of the Norfolk plant and sales division of **Bemis Bro. Bag Company, St. Louis.**

The new manager of tubular products and cold finished bar sales for the Seattle steel service plant of **Joseph T.**



L. B. Clay

Ryerson & Son, Inc., Chicago, is Loren B. Clay. Mr. Clay has been with the firm for 14 years and has been in sales work since 1946.

Two products sales appointments in the Fiber Glass Division of the **Pittsburgh Plate Glass Company** have been announced. Richard R. Pryor is manager of air filter products sales and James G. McGeevy is manager of battery products sales. Both men, who formerly were with the Glasfloss Division of the Tilo Roofing Co., became associated with PPG early this year when Pittsburgh Plate acquired the manufacturing facilities and assets of the Glasfloss Division at Hicksville, Long Island.

The appointment of Frank T. Clarke as manager of sales for American Steel & Wire Divisions sales office in Boston, has been announced by **United States Steel Corp., Cleveland.**

Gerald W. Harris, formerly in charge of eastern sales to the rubber industry, has been named assistant vice president, Industrial Products Department, **J. M. Huber Corp., New York City.** He will supervise sales of carbon blacks, clays and rubber chemicals. In addition,



G. W. Harris

it was announced that Paul W. Libby, formerly supervisor of rubber sales in the middle and far west, is now manager of Huber's development laboratories at Borger, Texas. Also, Louis F. Gongwer is now divisional manager of sales to the rubber and general industries.

Lamson Corp., Syracuse, has announced two appointments in the Philadelphia area. William H. Roth will handle Lamson conveyor and pallet loader sales in the Philadelphia and Delaware areas. W. Howell Finn will be responsible for Airtube sales in the same area plus conveyor and pallet loader sales in southeastern Pennsylvania and eastern Maryland.

George H. Bancroft, midwest district sales representative for the **Goodyear Aircraft Corporation, Akron,** since 1952, has been placed in charge of the company's newly-created Detroit field office.

Ralph W. Burdeshaw, industrial sales representative of **Libbey-Owens-Ford Glass Co., Toledo,** in the south, has been named general sales manager of the Corrulux Division in Houston,



R. W. Burdeshaw

Texas. Peter W. Fisher, sales manager for the southwestern region with headquarters in Houston, will be assistant sales manager in addition to his regular regional duties.

Robert G. Field, formerly plant manager, becomes sales manager and administrative assistant for **Lincoln Park Industries, Inc., Lincoln Park, Mich.**

Wallace J. Millar has been named sales manager on standard aircraft products at **Standard Pressed Steel Co., Jenkintown, Pa.** He was formerly a salesman in the Philadelphia area.

The appointment of W. H. Pender as manager, belting sales, **Quaker Rubber Corp., division of H. K. Porter Co., Inc,**



W. H. Pender

Philadelphia, has been announced. Mr. Pender has been with Quaker since 1947.

Additional News of Your Suppliers will be found following the Industrial Development section

Even when down in the dumps...



NYB&P Conveyor Belts do themselves proud!

It's the *cover*, as well as the carcass, that determines the life of a conveyor belt. Because NYB&P makes conveyor belting with so many types of covers compounded and engineered to resist various shapes, weights, temperatures, chemicals, etc., you'll find NYB&P belts giving outstanding service under circumstances that would quickly ruin other types.

Take, for example, the NYB&P conveyor belting shown here conveying all kinds of refuse from a city dump into the sorting and processing plant. Month after month, it successfully withstands the punishing effects of broken bottles, jagged cans, heavy scrap iron, broken crates, nails, ashes, food acids and exposure to all kinds of weather!

Whatever your conveyor belt problem, see your NYB&P distributor. He can provide a belt of the right strength and the right grade and thickness of cover . . . also, with any required special construction features such as flanged edges, crepe or traction tread, or NYB&P's unique nylon-cotton breaker strip that provides *balanced cushioning of load impact*. Ask for the NYB&P Conveyor and Elevator Belting catalog.

Gilmer V-BELTS AND "TIMING®" BELTS

NYB&P INDUSTRIAL RUBBER PRODUCTS

NYB&P — NEW YORK BELTING & PACKING CO. Founded 1846 — NEW YORK BELTING & PACKING CO. 1 Market St., Passaic, N. J.

America's Oldest Manufacturer of Industrial Rubber Products

For More Information Circle No. 120 on Inquiry Card—Page 17

MAINTENANCE MEN PREFER
O-B GATE VALVES FOR . . .

EASY take-down

QUICK re-assembly

in close quarters

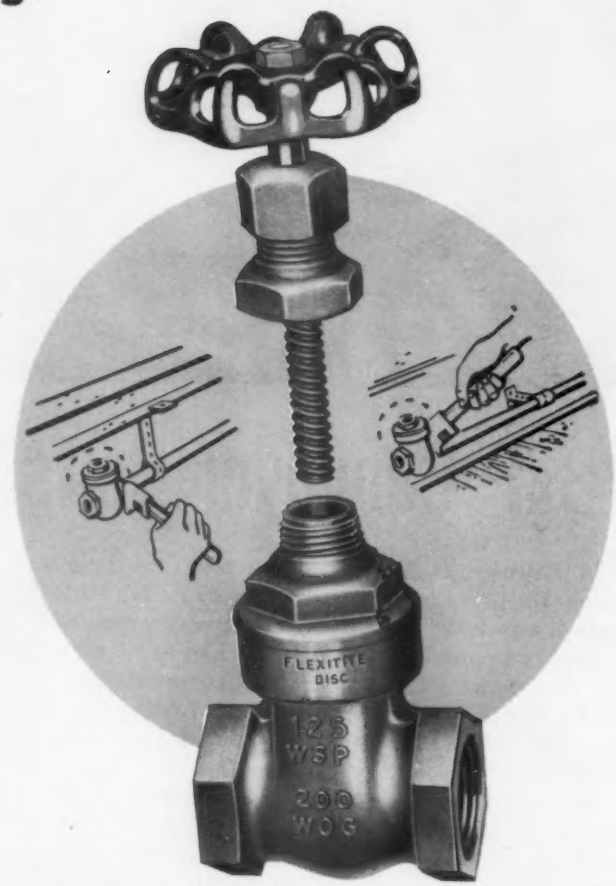
● O-B gate valves "break" conveniently and easily at the center joint. Stem, handwheel, packing nut and stuffing box come off as a unit. The Flexitite Disc® remains in the body. It stays in position for the stem to be re-inserted.

This easy take-down feature of non-rising stem gates simplifies installation in locations where space is limited. With most of the trimmings removed, there's more room for threading the valve body to pipe ends. Then when the body is in position, the valve can be re-assembled in a few seconds.

It's features like the easy take-down that make O-B gates preferred for industrial maintenance. They're available in sizes up to three inches, and for up to 200 pounds working steam pressure.

O-B bronze valves have been serving in industry for more than 60 years. Call your local Ohio Brass distributor for valves convenient to install and dependable in service.

Ohio Brass Company
Mansfield, Ohio



Ohio Brass Valves

BRONZE GLOBES, ANGLES, GATES AND CHECKS
FOR INDUSTRIAL SERVICE

4443-V



Do you know these famous record makers?

Both of these people are famous record makers for Columbia. You'll probably recognize Mindy Carson, but do you know that other famous record maker—tune-spotter Mitch Miller?

"When a hot song comes along," Miller says, "we often cut the master tape out in Hollywood, holding our breath because other companies will try to 'cover' the tune first.

"We rush the master tape to our Eastern factories—always relying on Air Express to get it through *fast!*

"The new disc is on the air and for sale in stores in record-breaking time, thanks to Air Express.

"We turn to Air Express at least three or four times a week to beat out competition.

"And yet, most of our shipments cost less with Air Express than with any other air service."

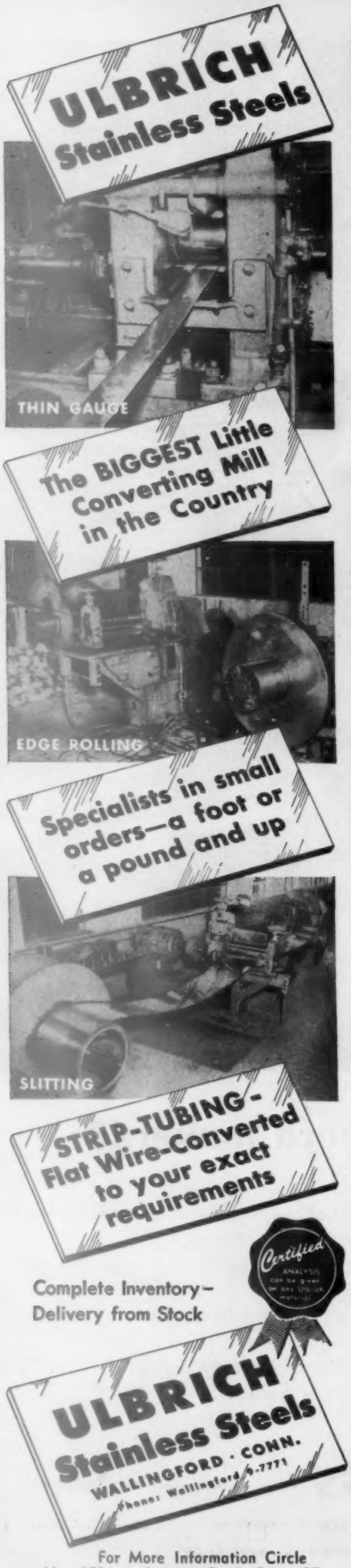
It pays to express yourself clearly. Say Air Express! Division of Railway Express Agency.

Air Express

***GETS THERE FIRST** via U.S. Scheduled Airlines*

CALL AIR EXPRESS . . . *division of* RAILWAY EXPRESS AGENCY

For More Information Circle No. 122 on Inquiry Card—Page 17



For More Information Circle
No. 123 on Inquiry Card—Page 17

F.O.B.



FILOSOFY OF BUYING



THE unseasonably wintry photograph herewith shows P.A. Bill Blake of The Carborundum Company "on location" at the company's scrap pile. Bill recently authored an article on scrap for the company house organ. This end-of-the-road accumulation of worn out and discarded material has many stories to tell the experienced observer—stories of long and useful service and stories of failure; good ideas obsoleted by technical progress or changing tastes; promising ideas that were frustrated or died through loss of interest; carelessness, indifference, and miscalculation; tests run to destruction, etc.

But there are constructive lessons to be learned from failures, too. One of these, reported in the story, has to do with worn hammer blocks that found their way into scrap. Examination of the worn parts suggested that by changing the size and shape, 100% additional life could be gained. This was tried, and proved highly successful, resulting in savings of several thousands of dollars annually through lower cost of purchased materials, increased production, labor saved in the replacement of mill parts only half as often—and less material going to the scrap pile.

BY COURTESY of the author, we have added another volume to our purchasing library. It is "Der Einkauf im Industriebetrieb" (Purchasing in Industry) by Dr. Karl Klinger of Essen, Germany, issued as part of a management library sponsored by the University of Göttingen—additional evidence that management's new interest in purchasing is a world-wide awakening.

• •

WHEN a salesman takes the purchasing agent of a customer or prospect out to dinner, it isn't news. But when 200 salesmen, from Boston to Kansas City, get together for a "Vendors' Party" in honor of a retiring P. A., who won't be signing any more purchase orders, it's worthy of more than passing notice, for it is striking testimony of the warm respect and friendship that can be built up in the course of business relationships over the years.

Last May, word got around in the trade that Adam Wolz, able and popular purchasing agent at the Hamilton Standard Division of United Aircraft, East Hartford, Conn., was to retire from active service on June 1st. A group of local vendor representatives decided that

something had to be done about it. The idea grew with spontaneous enthusiasm. National vendors in distant cities, old friends of Adam, heard about it and asked to be counted in. They met for cocktails and dinner at the Hartford Club on June 10th. When President A. H. d'Arcambal of Pratt & Whitney, toastmaster for the occasion, rapped for attention, more than 200 friends joined in the ovation.

Adam Wolz isn't signing any more purchase orders, but he has an imposing array of salesmen's signatures, engraved on a handsome silver testimonial tray, to remind him of his business friendships.

• •

IT OCCURRED to A. C. Weinreber, a purchasing agent for Sylvania Electric Products, that the company might save some money by using a different material in its TV set knobs. His suggestion was adopted, and when the saving was calculated, it amounted to $35,000. At a recent luncheon meeting of division executives, Mr. Weinreber received second award in the company's suggestion program—a 21-inch TV set —equipped with the new knobs.

• •

SEEMS as though everybody likes to spend — except purchasing agents, who may get a little bored with it because it's an everyday job with them. Maricopa County (Arizona) officials recently requested 45 department heads to submit budgets for the coming year, suggesting that conservatism might be in order. County P.A. Harold Holcomb put in for 14% less than was allotted him in 1953-1954. But the other 44 department heads unanimously upped their requests—one of them by a modest 156%. The county is limited by law to a 10% increase in total budget over the previous year.

• •

AN unusual combination of municipal responsibilities is that of Fred W. Walker, of McCook, Neb., who doubles as Fire Chief and (since January of this year) City Purchasing Agent. Asked recently by a reporter how he manages to carry the double load, Mr. Walker said, "I guess they figure that because I'm on duty 24 hours a day, I can get the job done."



Whether it's for a custom built rifle or mass produced precision parts.

The gunsmith, like Vinco, has the specialized "know-how" that creates extra quality.

The men in our production division have years of specialized experience in the precision machining of MAGNESIUM, BRONZE, ALUMINUM, CAST IRON and STEEL parts. Our machining facilities are so versatile that many varieties of parts, in a wide range of sizes, can be produced in quantities from a few pieces up to multiple thousands.

Your company will profit because our prices are low, scrap is held to a very minimum, and deliveries are made on schedule.

This is why Vinco specialists are your best bet.

VINCO CORP., 9119 Schaefer Hwy., Detroit 28, Mich.

Aircraft and Commercial Gears • Master Gears • Spline Gages • Precisiondex • Gear Rolling Inspection Fixtures • Recording Camshaft Comparators • Optical Master Inspection Dividing Heads • Involute Checkers • Indicator Snap Gages • B-1 and Special Formed Wheel Dressers.

VINCO ®

MILLIONTHS OF AN INCH FOR SALE

TRADEMARK OF DEPENDABILITY

For More Information Circle No. 124 on Inquiry Card—Page 17

Satisfaction rests on the carton



Every working day of the year sees tens of thousands of Union Corrugated Shipping Containers deliver famous brands to food outlets all over the United States. Lever Brothers Company, New York, is one of the leading manufacturers who specify these dependable boxes. Follow the lead of hundreds of the country's biggest shippers and talk to the man from Union—soon.

TRADE MARK UNION
INTEGRATED PLANNING
INTEGRATED PRODUCTION

UNION BAG & PAPER CORPORATION

CORRUGATED CONTAINER DIVISION • Box Plants: Savannah, Ga., Trenton, N. J., Chicago, Ill.

Eastern Division Sales Offices: 1400 E. State St., Trenton 9, N. J. • Southern Division Sales Offices: P.O. Box 570, Savannah, Ga.
Western Division Sales Offices: 4545 West Palmer, Chicago 39, Ill. • Executive Offices: Woolworth Bldg., New York 7, N. Y.

For More Information Circle No. 125 on Inquiry Card—Page 17



Put Hexachlorophene protection in all your washrooms with Armour antiseptic hand soap!

Keep your employees on the job by providing Armour antiseptic hand soaps to remove the skin irritants that cause contact dermatitis. Even more important, the Hexachlorophene in these Armour hand soaps actually destroys skin bacteria that cause secondary infections!

Hexachlorophene is the first germicidal agent ever found that stays antiseptic in soap. Daily washing with these Armour soaps containing Hexachlorophene will remove *up to* 95% of harmful skin bacteria! That's real protection for the people in your company and may add benefits in insurance and labor relations, too.

So order Liquid Dial® or powdered Formula #99 for your washrooms today! (You can order the powder form with either Borax or a vegetable scrubber added.) Request the samples and booklet and see for yourself how Armour Hexachlorophene soap protects against contact dermatitis!

Mail this coupon today

Armour and Company • 1355 W. 31st St. • Chicago 9, Ill.

Please send me a free sample of:

- ☐ **Formula #99 *Powdered* (with Borax, containing Hexachlorophene)**
- ☐ **Formula #99 *Powdered* (with vegetable scrubber, containing Hexachlorophene)**
- ☐ ***Liquid Dial* (containing Hexachlorophene)**
- ☐ **Booklet, "Antiseptic Soaps for Industrial Use."**

Name_____ **Title**_____

Firm_____

Address_____

City_____ **Zone**_____ **State**_____

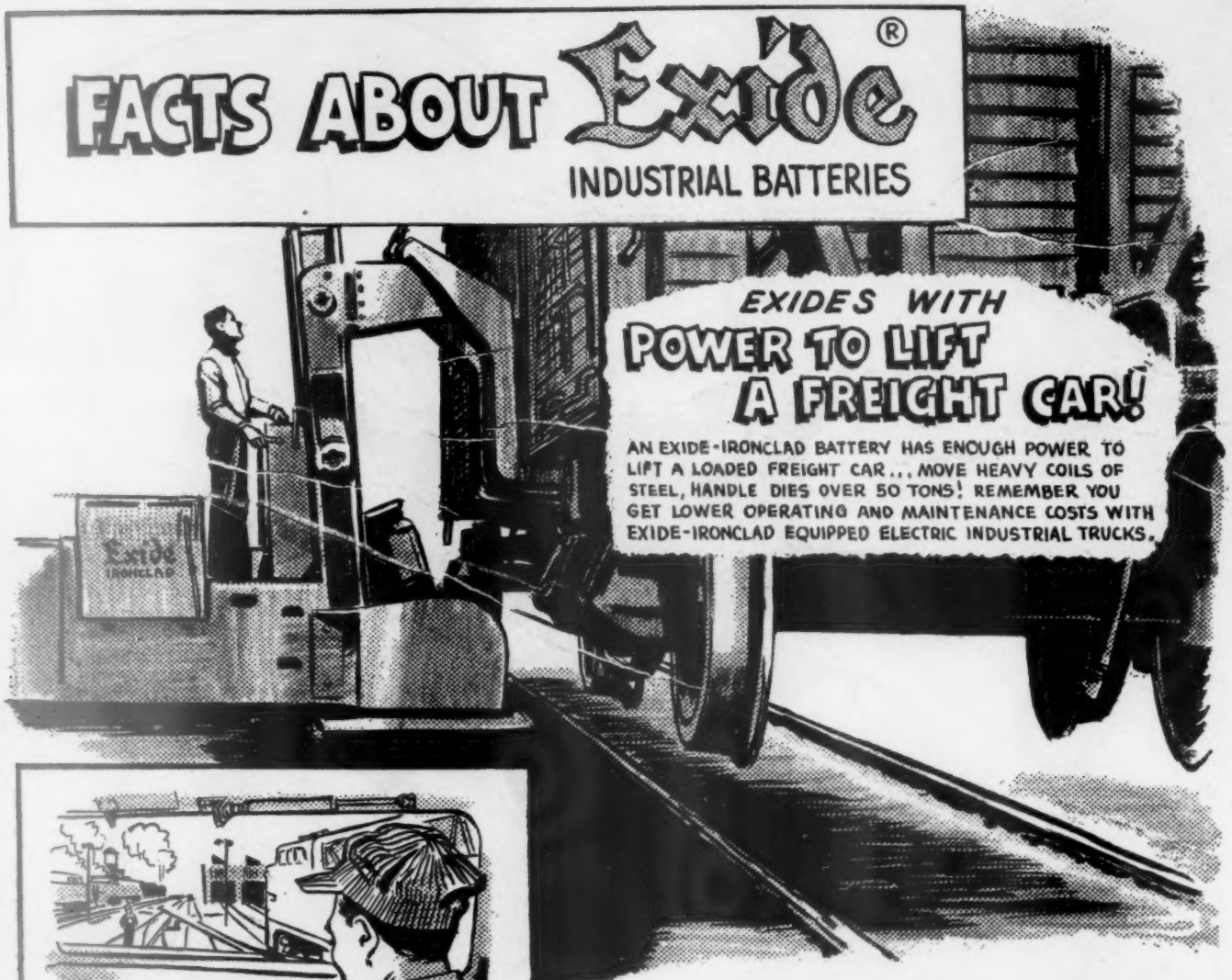
P8

ARMOUR *Industrial Soap Department*

Armour and Company • 1355 West 31st Street • Chicago 9, Illinois

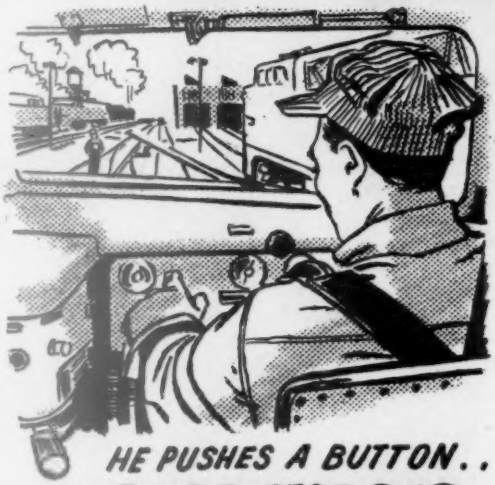
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FACTS ABOUT Exide®
INDUSTRIAL BATTERIES



EXIDES WITH POWER TO LIFT A FREIGHT CAR!

AN EXIDE-IRONCLAD BATTERY HAS ENOUGH POWER TO LIFT A LOADED FREIGHT CAR... MOVE HEAVY COILS OF STEEL, HANDLE DIES OVER 50 TONS! REMEMBER YOU GET LOWER OPERATING AND MAINTENANCE COSTS WITH EXIDE-IRONCLAD EQUIPPED ELECTRIC INDUSTRIAL TRUCKS.

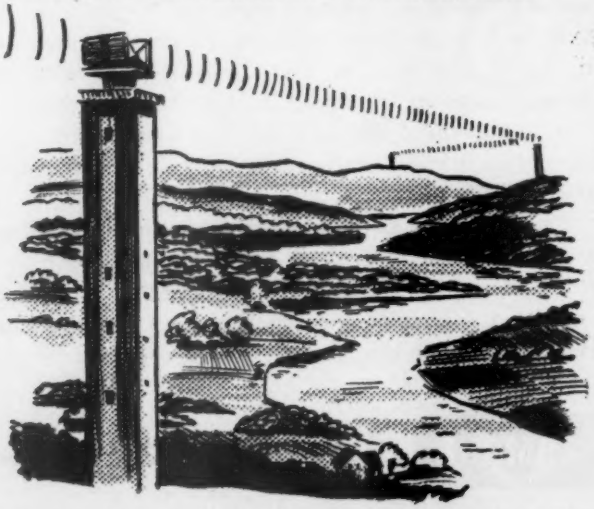


HE PUSHES A BUTTON... AND 2000 HORSES ARE OFF TO A FAST START!

A RAILROAD DIESEL LOCOMOTIVE HAS THREE 2000 H.P. ENGINES. A RUGGED EXIDE-IRONCLAD BATTERY SPINS THE ENGINE TO FIRING SPEED IN SECONDS FLAT... HELPS RAILROADS GET UNINTERRUPTED "ON LINE" SERVICE.

THE ELECTRONIC ERRAND BOY WHO CARRIES HUNDREDS OF MESSAGES AT ONCE!

MICROWAVE RADIO RELAY MAKE POSSIBLE AMERICA'S INVISIBLE HIGHWAY OF SPEECH. TELEPHONE MESSAGES, TV PROGRAMS, MILITARY USES, ARE JUST THE BEGINNING FOR THIS GROWING GIANT. INSIDE RADIO RELAY STATIONS MANY EXIDE BATTERIES ARE USED TO ASSURE UNINTERRUPTED COMMUNICATIONS!



EXIDE INDUSTRIAL BATTERIES ARE BUILT FOR LONGER LIFE AND GREATER POWER. LET AN EXIDE SALES ENGINEER SHOW YOU HOW EXIDES CAN IMPROVE YOUR OPERATIONS, CUT COSTS, PROTECT YOUR BUSINESS.

Exide INDUSTRIAL DIVISION, The Electric Storage Battery Company, Philadelphia 2, Pa.

For More Information Circle No. 127 on Inquiry Card—Page 17

For more Information Circle No. 128 on Inquiry Card—Page 17 →



bright strong easy to form

for everything AND the kitchen sink

SINK RIMS are an excellent example of Superior Stainless in service—all the way from initial ease of fabrication, through simplicity of installation, to life-long durability on the job. Rims of Superior Stainless stay bright with a wipe—can't rust, peel or chip—add value to the entire kitchen unit! • Let's help you find *your* profit-application for Superior Stainless Strip Steel. Write us about your product, today.

Superior Type 430 **Stainless** STRIP STEEL

Superior Steel
CORPORATION
CARNEGIE, PENNSYLVANIA

LOOK TO THE LEADER . . . FOR LUBRICATING DEVICES

GITS

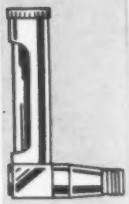






40 YEARS' LEADERSHIP

Yes, for 40 years GITS has been setting the standard for industry . . . solving tough lubricating problems . . . earning the confidence of manufacturers . . . it's the reason people say, "Call GITS first".



LOW COST

Yes, GITS oil cups can do a complete lubricating job for you . . . prolonging bearing life, reducing maintenance costs, cutting down-time, boosting production . . . and GITS oil cups cost so little.

WORLD'S LARGEST SELECTION

Yes, only GITS can offer you such a wide range of standard stock sizes. From *just one* source you can get *all* lubrication devices in *any design* for *any purpose.*







CONSISTENT TOP QUALITY

Yes, GITS is known for uniform quality in design, materials and machining . . . this means constant, dependable performance for you. Inferior products can cost you time and money. Demand the best . . . get GITS.



Oil Hole Covers • Oil Cups • Grease Cups • Bottle Oilers • Gauges • Gravity-Feed • Wick-Feed
Constant Level • Vibrating Rod Styles • Threaded or Drive-Type • Elbow or Straight

GITS BROS. MFG. CO.

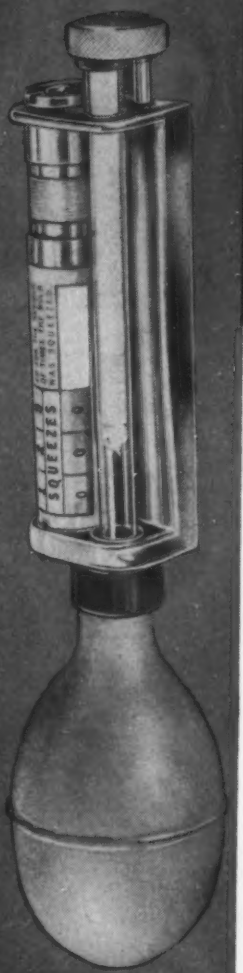
1865 S. Kilbourn Ave. Chicago 23, Ill.

Write today for Free Catalog No. 60A. Use it as your handy reference for lubricating devices.

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M.S.A. Carbon Monoxide Tester—Indicates CO in range of 0.005 to 0.10 percent by volume.

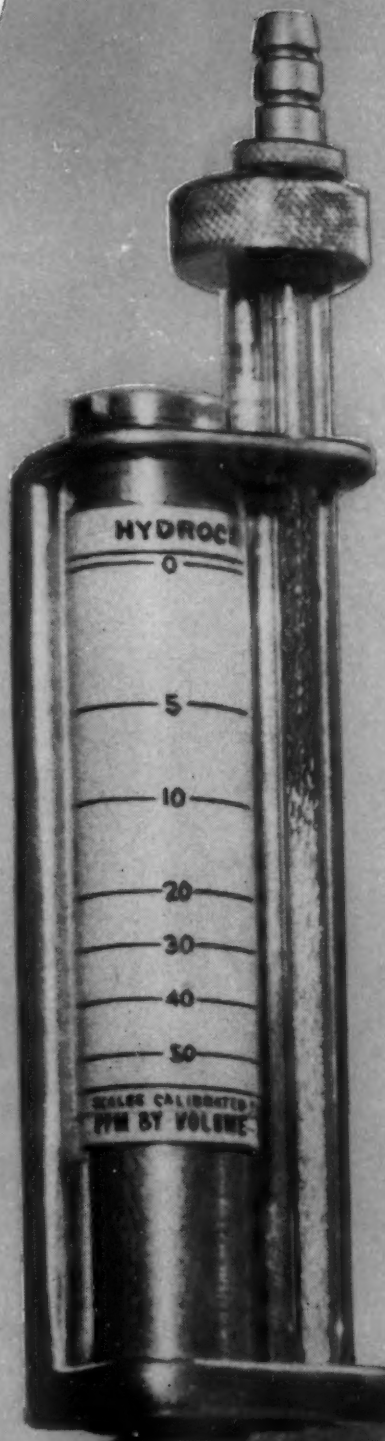


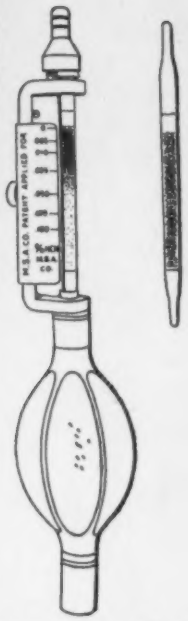


M.S.A. Aromatic Hydrocarbon Detector—Indicates benzene, 0 to 100 ppm; toulene and xylene, 0 to 400 ppm.

M.S.A. Sulphur Dioxide Gas Detector—Measures SO_2 concentrations from 0 to 50 ppm.







M.S.A. Hydrogen Sulphide Detector—Detects H_2S in ranges of 0 to .04 percent by volume, and 0 to 50 ppm.



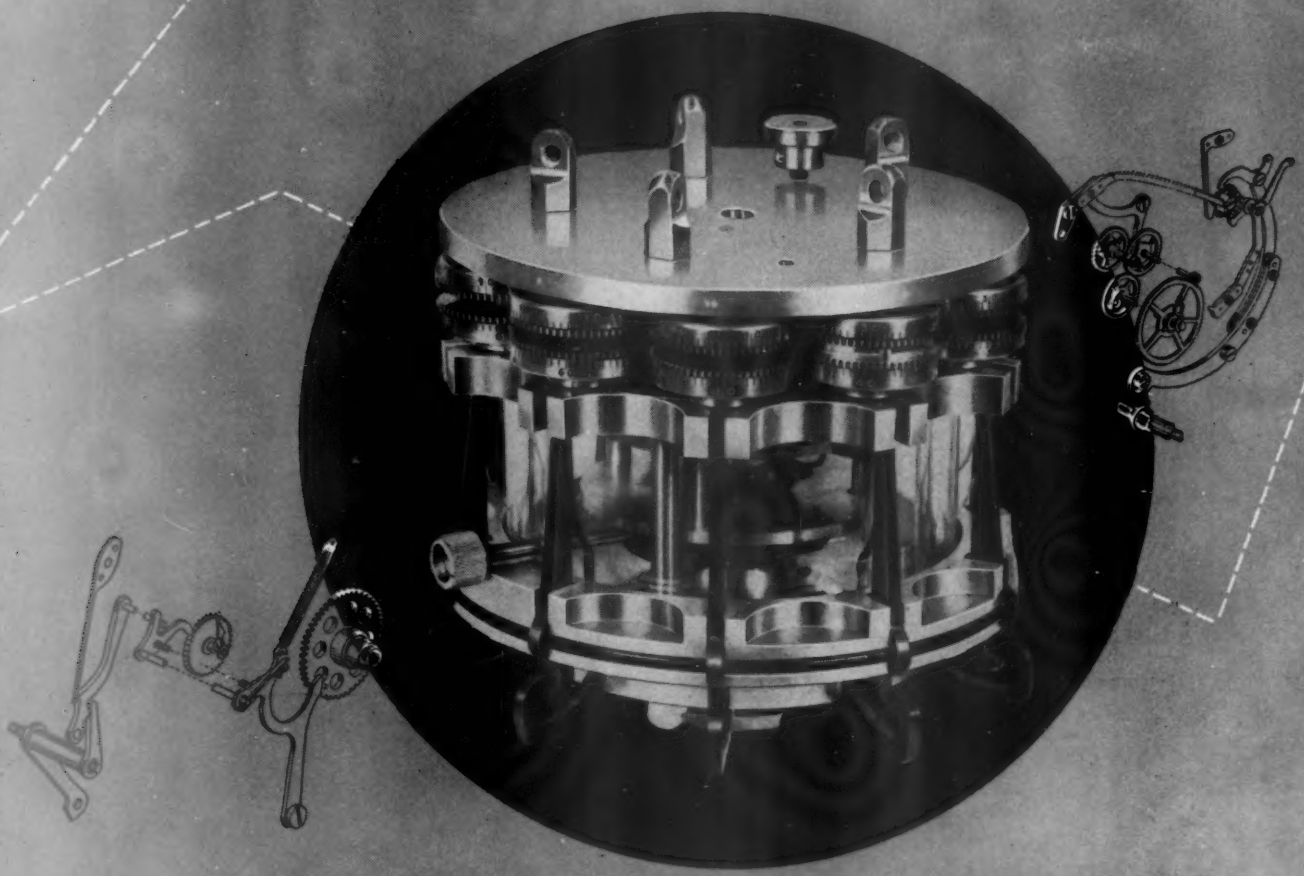
M.S.A. Hydrocyanic Acid Gas Detector—Indicates HCN from 0 to 50 ppm.

M·S·A . . . a complete line of portable instruments for on-the-spot detection of TOXIC HAZARDS

Scouting out suspected areas for toxic breathing hazards is essential to worker health and efficiency. To help you do the job with speed and accuracy, M.S.A. designed this complete line of portable instruments. Squeezing aspirator bulb draws in air samples. Discoloration of detector tubes indicates the concentrations of the various hazards. Reading is taken directly from graduated scales. Write for complete details.

MINE SAFETY APPLIANCES CO.
201 N. Braddock Ave., Pittsburgh 8, Pa.
At Your Service: 83 Branch Offices in the United States and Canada

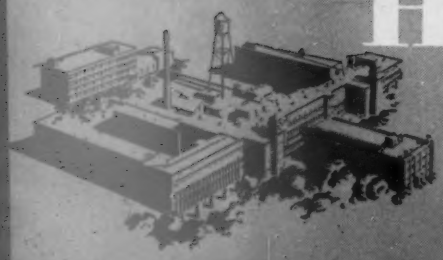
how to make a good product



with the help of Hamilton's COMPLETE Precision Production Facilities

Developing a new product? Planning to improve an existing one? When your problem involves a complex mechanism, like the ones shown above, or precision components—the complete production facilities that make America's finest watches and produce vital defense material —are available to help solve your problems.

You are invited to investigate this *complete* source for screws, springs, flat and recessed shapes, jewel bearings, investment castings, pinions, wheels, assemblies, or any other "problem parts" to help improve *your* products. Send us your prints . . . of course, there's no obligation.

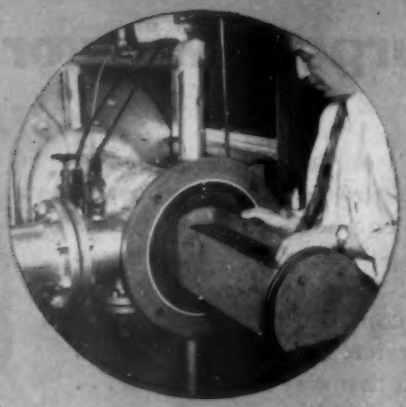


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Hamilton Watch COMPANY

954 WHEATLAND AVE., LANCASTER, PA.

better!



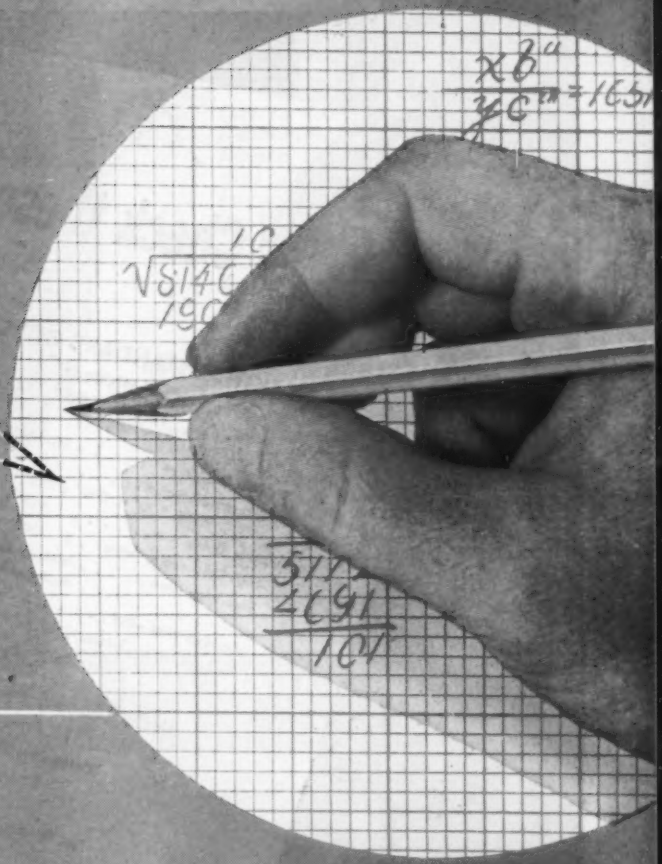
heat treating



fabrication



assembly





gauging and inspection

backed by



engineering

metallurgy

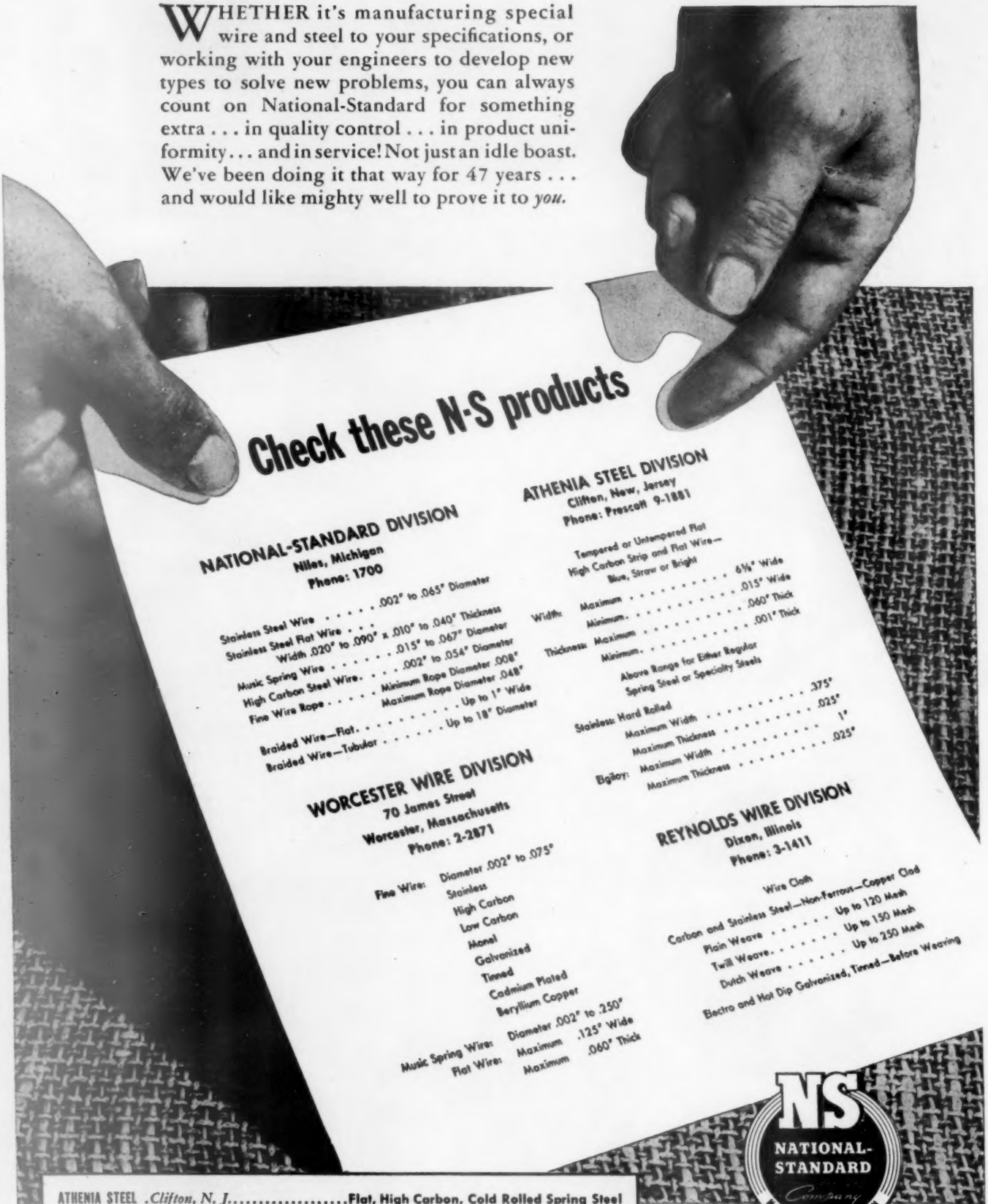


physical & chemical testing



Need special-purpose wire or steel?

WHETHER it's manufacturing special wire and steel to your specifications, or working with your engineers to develop new types to solve new problems, you can always count on National-Standard for something extra . . . in quality control . . . in product uniformity . . . and in service! Not just an idle boast. We've been doing it that way for 47 years . . . and would like mighty well to prove it to *you*.



Check these N-S products

NATIONAL-STANDARD DIVISION
Niles, Michigan
Phone: 1700

Stainless Steel Wire . . . . . .002" to .065" Diameter
Stainless Steel Flat Wire . . . Width .020" to .090" x .010" to .040" Thickness
Music Spring Wire . . . . . .015" to .067" Diameter
High Carbon Steel Wire. . . . .002" to .054" Diameter
Fine Wire Rope . . . . . Minimum Rope Diameter .008" Maximum Rope Diameter .048"
Braided Wire—Flat. . . . . Up to 1" Wide
Braided Wire—Tubular . . . . . Up to 18" Diameter

ATHENIA STEEL DIVISION
Clifton, New Jersey
Phone: Prescott 9-1881

Tempered or Untempered Flat High Carbon Strip and Flat Wire—Blue, Straw or Bright

Width: Maximum . . . . . 6½" Wide
Minimum. . . . . .015" Wide
Thickness: Maximum . . . . . .060" Thick
Minimum. . . . . .001" Thick

Above Range for Either Regular Spring Steel or Specialty Steels

Stainless: Hard Rolled
Maximum Width . . . . . .375"
Maximum Thickness . . . . . .025"
Bigjay: Maximum Width . . . . . 1"
Maximum Thickness . . . . . .025"

WORCESTER WIRE DIVISION
70 James Street
Worcester, Massachusetts
Phone: 2-2871

Fine Wire: Diameter .002" to .075"
Stainless
High Carbon
Low Carbon
Monel
Galvanized
Tinned
Cadmium Plated
Beryllium Copper

Music Spring Wire: Diameter .002" to .250"
Flat Wire: Maximum .125" Wide
Maximum .060" Thick

REYNOLDS WIRE DIVISION
Dixon, Illinois
Phone: 3-1411

Wire Cloth
Carbon and Stainless Steel—Non-Ferrous—Copper Clad
Plain Weave . . . . . Up to 120 Mesh
Twill Weave. . . . . Up to 150 Mesh
Dutch Weave . . . . . Up to 250 Mesh
Electro and Hot Dip Galvanized, Tinned—Before Weaving

NS NATIONAL-STANDARD Company NILES, MICHIGAN

ATHENIA STEEL	*Clifton, N. J.*	Flat, High Carbon, Cold Rolled Spring Steel
NATIONAL-STANDARD	*Niles, Mich.*	Tire Wire, Stainless, Fabricated Braids and Tape
REYNOLDS WIRE	*Dixon, Illinois*	Industrial Wire Cloth
WAGNER LITHO MACHINERY	*Jersey City, N. J.*	Metal Decorating Equipment
WORCESTER WIRE WORKS	*Worcester, Mass.*	Round and Shaped Steel Wire, Small Sizes

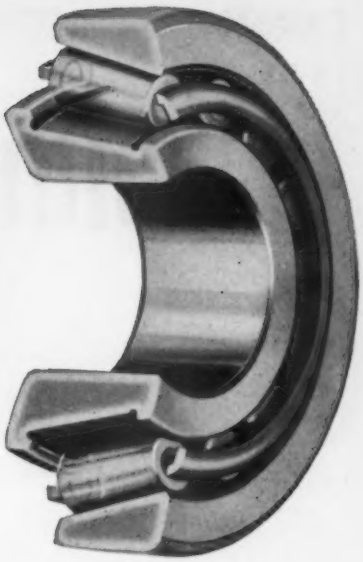
DIVISIONS OF NATIONAL-STANDARD CO.
NILES, MICHIGAN

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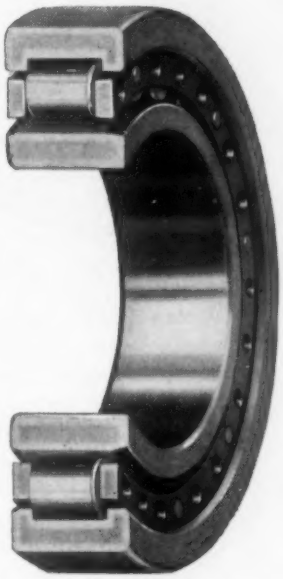
WHATEVER YOUR ROLLER BEARING APPLICATION

specify BOWER!



Earthmovers, jet turbine engines, rolling mill equipment, truck axles—you name it! Bower builds a complete line of tapered, straight and journal roller bearings including a size and type to fit *your* product. What's more, these dependable bearings have *proved* themselves in virtually every conceivable type of application. Their built-in quality, skillful engineering and advanced design features provide such important bearing advantages as reduced wear, longer life and lower maintenance requirements. Let a Bower engineer give you full details on the complete Bower line.

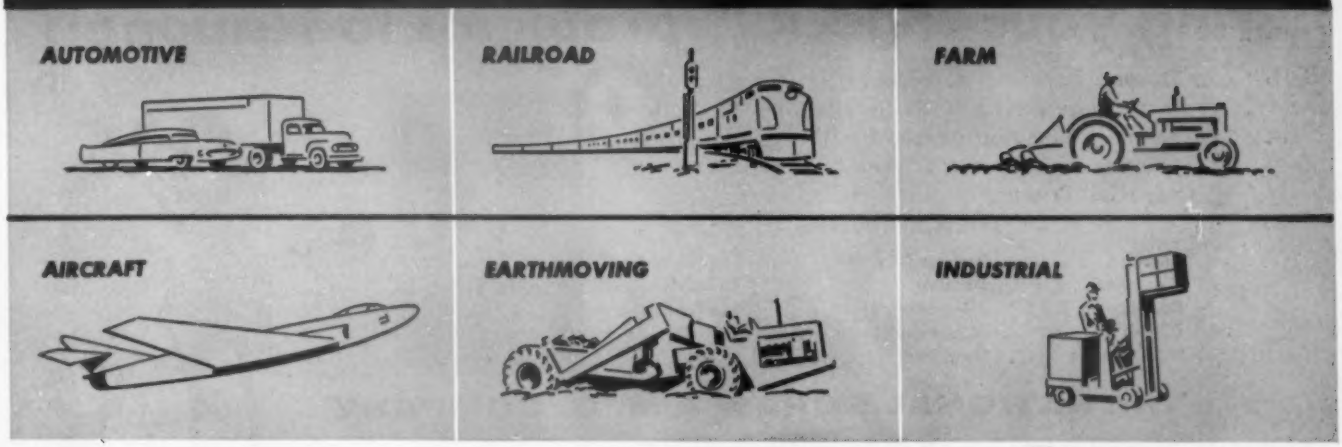
BOWER ROLLER BEARING COMPANY
DETROIT 14, MICHIGAN



BOWER TAPERED ROLLER BEARINGS INCORPORATE ADVANCED SPHER-O-HONED DESIGN! Spherically generated roll heads and higher flange with larger, two-zone contact area reduce wear, improve roller alignment and virtually eliminate "end play." This helps hold adjustment and pre-load longer and better. Larger oil groove provides positive lubrication.

BOWER STRAIGHT ROLLER BEARINGS ARE BUILT TO CARRY MAXIMUM LOADS! Integral two-lip race increases rigidity—keeps rollers in proper alignment at all times. Steel cage allows free movement of rollers between races during normal operation. High-grade alloy-steel rollers and races are precision-ground for quieter, smoother operation.

A COMPLETE LINE OF TAPERED, STRAIGHT AND JOURNAL ROLLER BEARINGS
for every field of transportation and industry



BOWER

SPHER-O-HONED

ROLLER BEARINGS

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Welding eliminated HERE



Welding operation required in two-piece construction was eliminated by cold heading bolt in one piece.

Roll threading permitted faster production at lower cost.

A manufacturer of power lawn mowers uses a bent eyebolt as a mounting brace to adjust the cutting height of the mower blades. The bolt was formerly produced by welding an eye forging to a bolt made on a screw machine . . . and then bending into the shape needed. National was asked how this bolt could be produced faster and at lower cost.

National's "Special Products Service" came up with a method of producing the bolt in one piece by cold heading and roll threading. In this way, the welding operation was eliminated and the manufacturer realized a lower unit cost. Thanks to National's wide range of cold heading equipment and specialized know-how . . . the same type of economy can be offered you.

Bring your "Special" problems to National

Do you have a fastener or a small part problem that can be solved by National's "Special Products Service"? Our representative will be glad to discuss your needs. Write for free copy of National's "Special" fastener booklet.





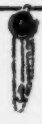
REPRESENTATIVES IN:

Chicago	Kansas City, Mo.	Philadelphia
Cincinnati	Lansing	Rochester
Denver	Milwaukee	San Francisco
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Indianapolis	New York	St. Louis

THE NATIONAL SCREW & MFG. COMPANY
Cleveland 4, Ohio
Pacific Coast: National Screw & Mfg. Co. of Cal.
3423 South Garfield Ave., Los Angeles 22, Cal.

MANUFACTURERS OF PHILLIPS RECESS SCREWS

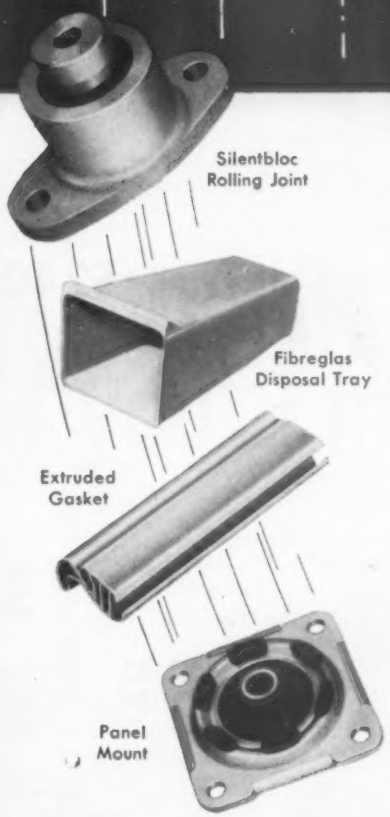
National PRODUCTS

Fasteners  Hodell Chains  Chester Hoists 

For More Information Circle No. 134 on Inquiry Card—Page 17

Buy Right from the Blueprint *and* Get Good Delivery...

ON CUSTOM { Moldings, Extrusions, Stampings, Assemblies



Our highly-organized custom design and production service enables us to start from scratch with a product and still give you amazingly fast delivery. Your management can schedule your order right into its production line and be assured that the needed product will arrive on time.

We save you time and buying effort with our completely centralized service . . . with our own mold-and-die making facilities, with our own modern machine shop for producing specially designed tools, jigs and fixtures, with highly experienced research and engineering staffs which tie the service together.

We offer immediate delivery on over 50 vibration control items, rubber and plastic gaskets, and torque springs. For information on our services, facilities and products just fill out the coupon below.

Here are some of the many products now serving and saving in industry

- Silentbloc vibration and shock mountings
- Silentbloc bushings
- Silentbloc bearings
- Oil & hydraulic seals
- Bonded to metal rubber parts
- Hydraulic brake parts
- Metal stampings
- Extruded & molded rubber
- Extruded plastic
- Polyester glass laminates
- Sponge rubber
- Glass run channel

"From Plans to Products in Plastics and Rubber"

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☐ Send literature covering your complete lines
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COMPANY_____ NAME_____

STREET_____ CITY_____ STATE_____

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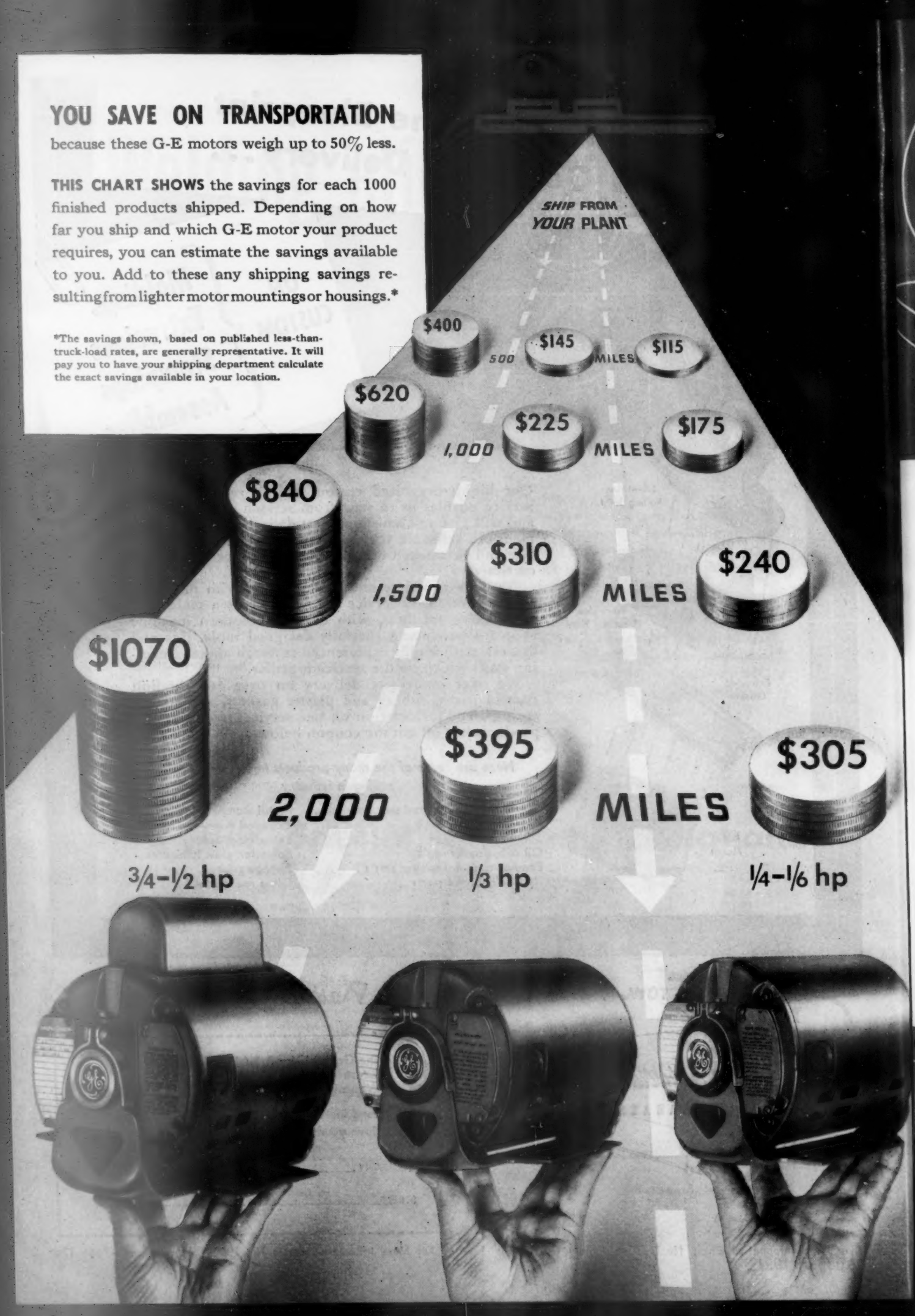
For More Information Circle No. 136 on Inquiry Card—Page 17→

YOU SAVE ON TRANSPORTATION

because these G-E motors weigh up to 50% less.

THIS CHART SHOWS the savings for each 1000 finished products shipped. Depending on how far you ship and which G-E motor your product requires, you can estimate the savings available to you. Add to these any shipping savings resulting from lighter motor mountings or housings.*

*The savings shown, based on published less-than-truck-load rates, are generally representative. It will pay you to have your shipping department calculate the exact savings available in your location.





YOU SAVE ON MATERIAL COSTS because new G-E motors—as much as 50 percent lighter, 40 percent smaller—permit you to design smaller and lighter motor mountings and housings.



YOU SAVE ON ASSEMBLY COSTS because your assembly-line personnel will produce more efficiently with less fatigue since these General Electric motors are far easier to handle.

New smaller, lighter G-E motors give you 3 important cost savings

Significant savings are yours when you specify new lighter, smaller General Electric fractional-horsepower motors to power your products:

1. **YOU SAVE ON TRANSPORTATION**—New G-E motors, as much as 50% lighter, reduce your finished-product shipping costs.
2. **YOU SAVE ON MATERIALS**—Reduced motor weight permits use of lighter mountings. Smaller size (by 40%) means smaller housings are adequate.
3. **YOU SAVE ON ASSEMBLY**—Your assembly-line people will find the all-new G-E designs take the strain out of motor handling, speed installation.

You'll find these new G-E motors solve design problems, too: improved insulation and a new ventilation system permit application where adverse conditions exist . . . add to motor life in any location. A better lubrication system and thrust-bearing design mean that these new motors will operate at any angle.

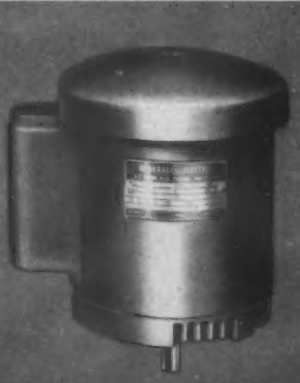
To start saving with these amazing new motors, contact your nearby G-E Apparatus Sales Office today. Or write for Bulletin GEA-5567 to General Electric Co., Section 702-10, Schenectady 5, New York.

GENERAL ELECTRIC

OIL BURNER MOTORS



JET PUMP MOTORS



FAN MOTORS



LAWN MOWER MOTORS



Ansul

is the only dry chemical fire extinguisher backed by a five year warranty!

Here is proof of Ansul's superiority . . . *a five year equipment warranty*, the only one of its kind in the fire control industry.

For the buyer of fire equipment this important warranty means many *extra* years of trouble-free protection plus freedom from costly and frequent maintenance checks and repairs.

The special design and construction features that make this warranty possible provide not only dependable protection but also *fast*, *effective* fire control. Ansul's *weather-tight* construction keeps out moisture and resists corrosion. *Patented nozzles* deliver the right kind of stream for your fire protection problem. The *sealed pressure cartridge* puts Ansul's "Plus Fifty" dry chemical to work immediately—no delay or lag. And finally *rugged construction* makes it possible for Ansul equipment to give peak performance under the toughest operating conditions.

HERE IS THE BIG TRAINING AND SERVICE PLUS OFFERED ONLY BY ANSUL!
Available without cost to all Ansul users.



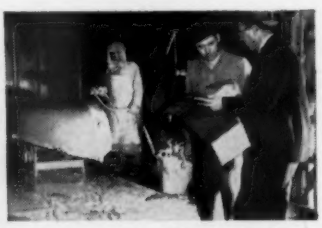
Training for your personnel at your plant by Ansul specialists.



Customer training school at Marinette for your key safety personnel.



Visual aids on fire control for your safety meetings and other training.



In-plant survey to scientifically determine your fire protection needs.

Call the Ansul Man!

ANSUL

Get in touch with your local Ansul man through the "yellow pages" or write ANSUL CHEMICAL COMPANY, Fire Equipment Div., Dept. F-83, Marinette, Wisconsin.



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"I was promised delivery today,

but now I'm told you've no stock of one rope and only half enough of another. This delay is costing me money and plenty of it. From now on it's Roebling for me!"

* * *

You can count on prompt and full delivery of Roebling wire rope. Your nearest Roebling office and distributor will help you choose the rope that will perform and stand up best in industrial service. And you'll get what you want, when you want it — straight from nearby warehouse stock.

ROEBLING CF&I

Subsidiary of The Colorado Fuel and Iron Corporation

JOHN A. ROEBLING'S SONS CORPORATION, TRENTON 2, N. J.

BRANCHES: ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 3253 FREDONIA AVE. • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 5216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, TRENTON 2, N. J.

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NOW... WILLSON INTERCHANGEABLE RESPIRATORS

IN BOTH SINGLE AND DOUBLE CARTRIDGE STYLES!

Single-Cartridge Series 400



NOTE: The cartridges and filter shown for use in the Series 400 single-cartridge respirator are exactly the same as those used in the Series 800 double-cartridge respirator and can be used interchangeably in both. The other five cartridges, filters, and combinations are recommended for use only in the Series 800 respirator.

No. 441 · No. 442 · No. 443 · No. 460



#41 Cartridge for Organic Vapors (BM2308)



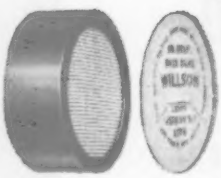
#42 Cartridge for Acid Gases



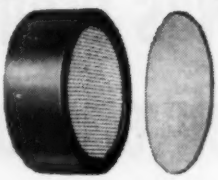
#43 Cartridge for Organic Vapors and Acid Gases



(BM2161) #R415 Filter for Dusts and Mists (BM2162)



#41 Cartridge and #R415 Filter for Dusts and Organic Vapors (BM2308)



#41 Cartridge and #R472 Filter for Paint Spray



#44 Cartridge for Ammonia



#R361 Filter for Metal Fumes, Dusts and Mists (BM2149)



#R436 Filter for Radioactive and Beryllium Dusts, Mists or Fumes

No. 841 · No. 841 · No. 841P · No. 842 · No. 844 · No. 843 · No. 880A · No. 860 · No. 890

Double-Cartridge Series 800



These Willson Respirators are the first truly interchangeable types in the field. Neither style requires additional parts or accessories to make use of the cartridges, filters, or combinations indicated to be used with them.

Write for bulletins describing these new Willson Interchangeable Respirators. Standardizing on them will give you the respiratory protection you want and simplify your inventory as well.

More than 300 Safety Products Carry This Famous Trademark

WILLSON®

Established 1870

WILLSON PRODUCTS, INC.

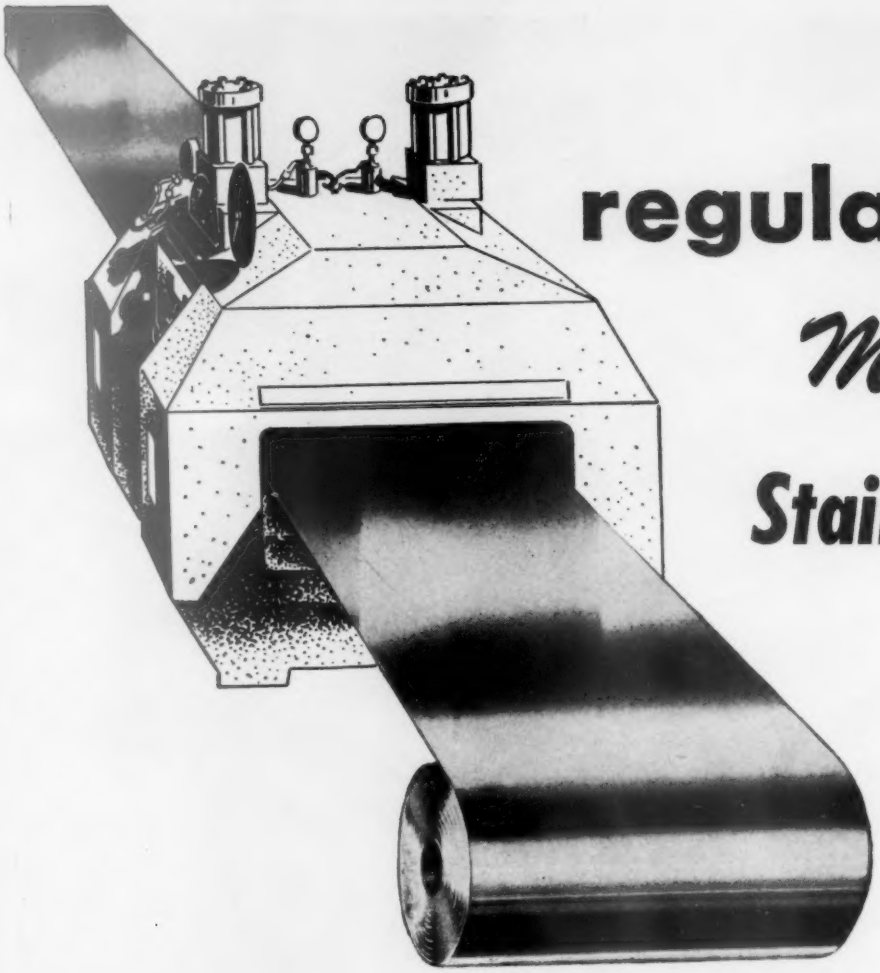
221 Washington Street

Reading • Pennsylvania

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regular use of *MicroRold®* Stainless Sheets

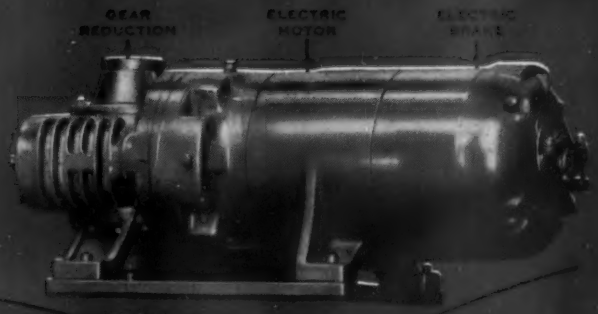
SAVES MONEY!

Stainless sheets are usually ordered by gauge number—with permissible A.I.S.I. thickness variation of plus or minus 10%—but are sold on a weight basis. Thus, you may order 18 gauge, needing about .0475″ thickness, and receive .052″ thickness. But MicroRold may be held to a 3% plus or minus tolerance; and you may order by gauge number, specifying that it be rolled on the "light side" of the gauge range. While these savings may not be apparent in every single sheet of MicroRold, the weights will average less than the theoretical when figured over a period of time. These savings can be substantial in your annual profit picture.

Washington Steel
CORPORATION
WASHINGTON, PENNSYLVANIA

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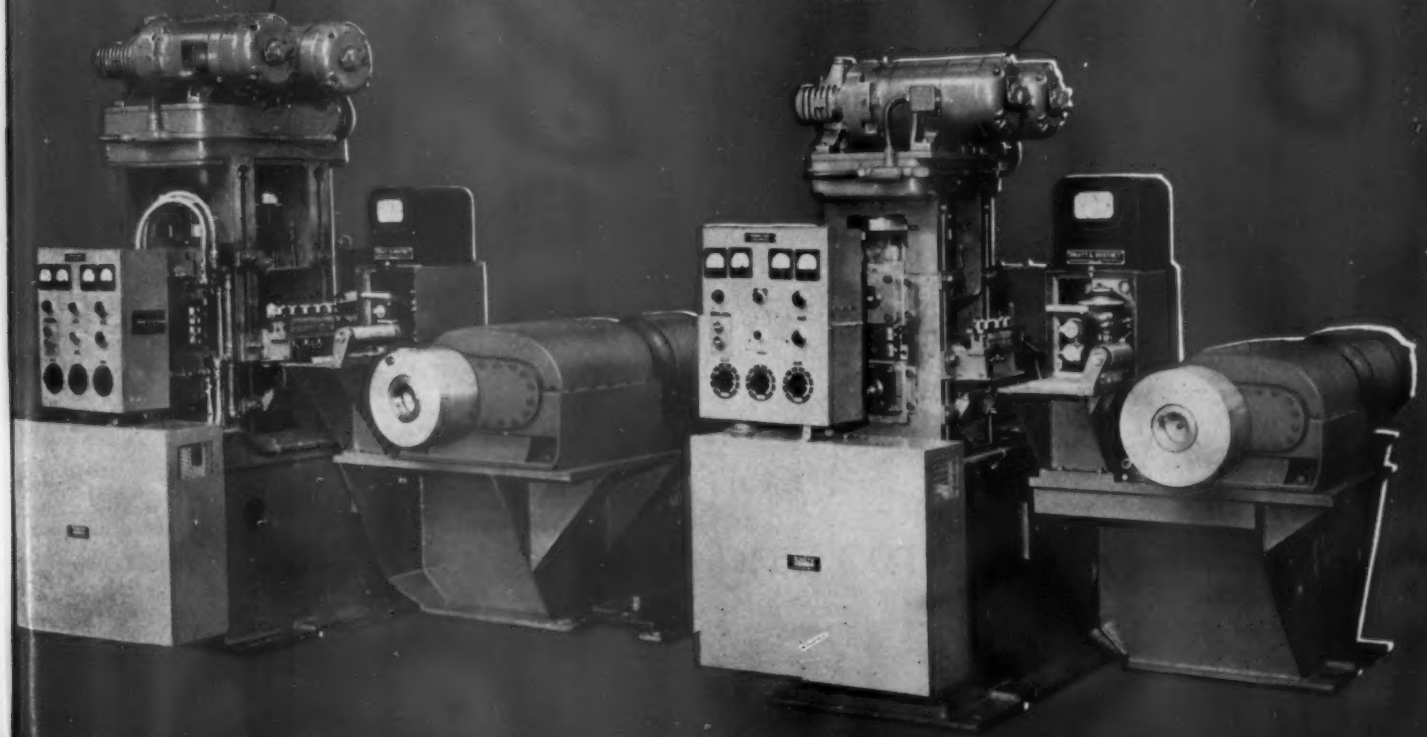


See how easily the standard electric motor, standard gear reduction, standard electric brake combine into a drive that gives the RIGHT horsepower, the RIGHT shaft speed, the RIGHT features . . . all in one compact unit. Nowhere else will you find power units that are so flexible, so easily adaptable, and in such a wide range of types and ratings.

Master power drives are available in thousands and thousands of ratings (1/8 to 400 HP) . . . in open, enclosed, splash proof, fan cooled, explosion proof . . . horizontal or vertical . . . for all phases, voltages and frequencies . . . in single speed, multi-speed and variable speed types . . . with or without flanges or other special features . . . with 5 types of gear reduction up to 430 to 1 ratio . . . with electric brakes . . . with fluid-drive . . . with mechanical or electronic variable speed units . . . and for every type of mounting . . . Master has them all and so can be completely impartial in helping you select the one best power drive for you.

standard units easily combine into special purpose drives

THE MASTER ELECTRIC COMPANY • DAYTON 1, OHIO



We'll put our cards on the table...

when bidding for your molded plastics orders

When you come to us for advice on your plastic molding needs, we'll give it to you straight. Our full house* of the latest, most modern molding machinery is your ace in the hole to beat increased competition. When the chips are down, it pays to have Aico as a partner. Let's arrange a friendly get-together and talk it over. Drop us a line today

AMERICAN INSULATOR
Since 1916
NEW FREEDOM, PA.



*a complete molding service

including engineering counsel, mold making, transfer, compression, injection and cold molding plus the molding of reinforced plastics. With this array of services, Aico is in a position to make unbiased recommendations to your best advantage.



Looking for a dependable zinc alloy?



...get it from National Lead Company

When you're in the market for zinc alloys, you are interested in two prime factors, apart from price. One – you want an alloy that hits your specifications right on the button, from the first pig on the pallet to the last one into your pot. You want a *dependable* alloy. Two – you want a source with facilities for prompt and proper handling of your order, that won't turn up its nose at ton lots or be fazed at facing multi-car shipments. You want a *dependable* source.

National Lead Company fills the bill on both counts.

Long a supplier to leading makers of zinc alloy parts and products, National Lead has the research, testing and production facilities to provide alloys to meet all requirements of pressure die, sand mold, slush mold and other casting processes . . . clean alloys that contribute to high output rate and low reject percentage . . . alloys that give dependable performance.

So far as handling orders efficiently is concerned, you need only keep in mind that our network of plants and warehouses is as truly national in scope as it is "National" in name. You can depend on it that your order will be filled and shipment made in a manner that reflects these unsurpassed facilities.

NATIONAL LEAD COMPANY

General Offices: 111 Broadway, New York 6, New York
Atlanta • Baltimore • Buffalo • Chicago • Cincinnati
Cleveland • Dallas • Detroit • Kansas City
Milwaukee • New Orleans • Omaha • Philadelphia • Pittsburgh • St. Louis • St. Paul
Boston: National Lead Co. of Mass.; Pacific Coast: Morris P. Kirk & Son, Inc., Los Angeles, Emeryville (Calif.), Phoenix, Portland, Salt Lake City, Seattle; Canada: Canada Metal Co., Ltd., Toronto, Montreal, Vancouver, Winnipeg.

Dutch Boy PRODUCTS

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"Holding Power" is an interesting new industrial film which tells the complete story of fasteners. It describes common, everyday fastener items, such as bolts, nuts, rivets, track bolts and spikes, and shows how important they are to our modern way of life. The film also includes roof bolts, high-strength bolts, oil-well sucker rods, and a wide range of ingeniously designed special bolts.

"Holding Power" is in color, with sound. It is on 16 mm film, and runs about 25 minutes.

The film is intended not only for those closely associated with the fastener field, but also for general-type audiences. There is no charge for this educational picture, except for return postage. If you would like to use a print, write fully to Room 1026, Publications Department, Bethlehem Steel Company, Bethlehem, Pa., preferably well in advance of your showing date.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

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What shape is a quality fastener?

Here is a handful of ELASTIC STOP® nuts. Each has ESNA's familiar red locking collar . . . is self-locking and vibration-proof. Each is a readily assembled, one-piece unit. Each provides positive protection against thread corrosion . . . prevents liquid seepage along bolts. Each is made from the finest of raw materials. Each is exactly controlled as to finished dimensions, class of thread fit and finish. Each is now in use on critical applications, with a record for uniform high quality that is unmatched.

Most of them are standard parts. Some originated as the result of a specific request for ESNA's help with an important fastening problem.

Isn't it logical to call on us with your next fastening problem?

ELASTIC STOP NUT CORPORATION OF AMERICA

ESNA TRADE MARK

ROLLPIN TRADEMARK

Elastic Stop Nut Corporation of America
Dept. N62-815, 2330 Vauxhall Road, Union, N. J.

Please send the following free fastening information:

☐ ELASTIC STOP nut bulletin

☐ Here is a drawing of our product. What self-locking fastener would you suggest?

Name_____ Title_____

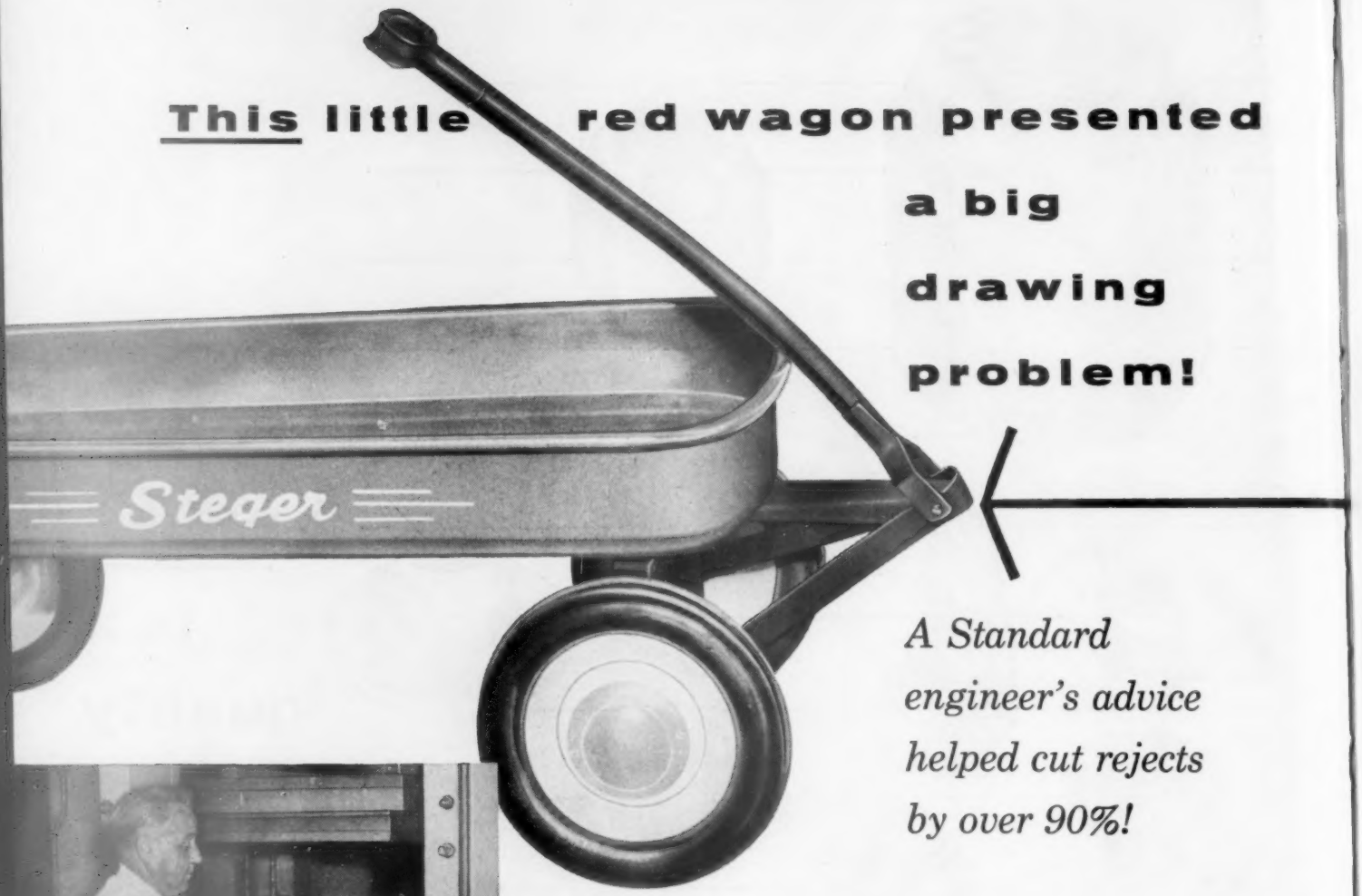
Firm_____

Street_____

City_____ Zone_____ State_____

For More Information Circle No. 146 on Inquiry Card—Page 17

This little red wagon presented a big drawing problem!



A Standard engineer's advice helped cut rejects by over 90%!



At Steger, die cleaning is of major importance because a single scratch can result in torn or ruined bodies during the processing. STANICOOL HD safely reduces the time-consuming die cleaning operation to an *effective* minimum.

■ The Steger Products Manufacturing Company (Steger, Illinois) manufactures children's wagons. Of the 8-hour shift capacity of 1600 to 1800 wagon bodies, up to 20% formerly wound up as rejects, and the dies had to be cleaned after every 10 to 15 bodies.

Six years ago a Standard Cutting Oil Engineer suggested STANICOOL HD. Today it's still on the job—the reject rate reduced to less than 10 a day. Die breakage is down to almost nothing; dies are cleaned only once or twice daily. Again, Standard Oil's metalworking products prove they can do the hard jobs better!

STANICOOL HD Soluble Oil—for cutting and grinding operations and for certain forming operations. Mixes readily, non-irritating, anti-rust. Call on the services of your Standard Oil Cutting Oil Engineer. Write Standard Oil Company (Indiana), 910 S. Michigan Avenue, Chicago 80, Illinois, to secure the services of the Standard Cutting Oil Engineer nearest you.

STANDARD

STANDARD OIL COMPANY

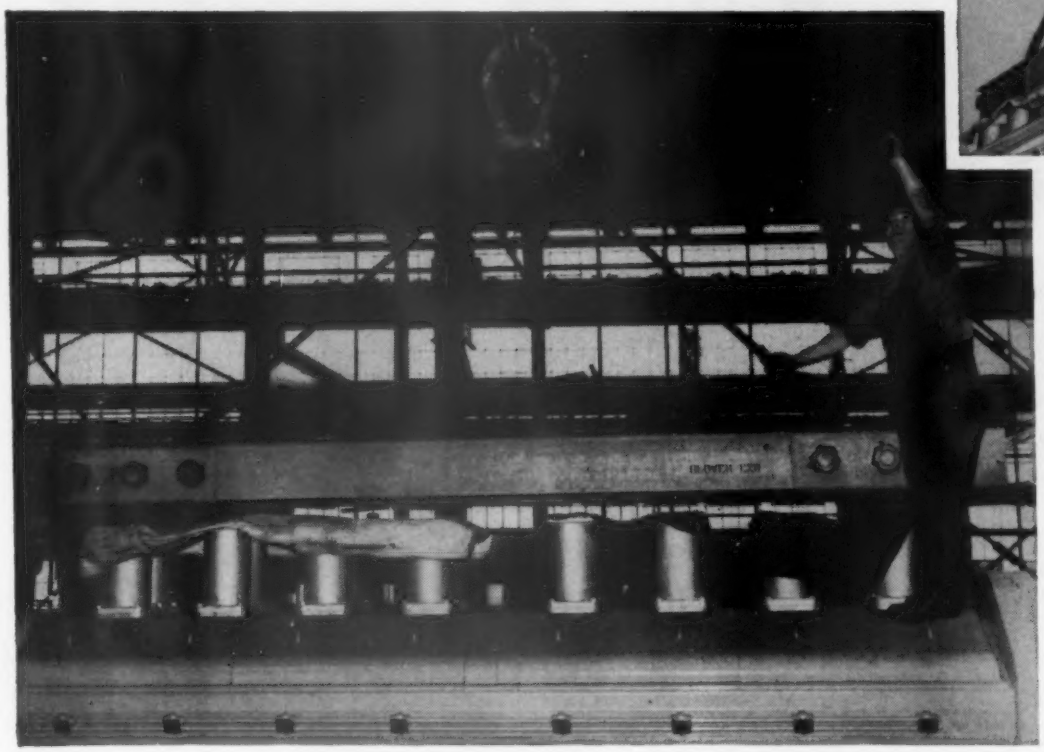
(Indiana)

A complete line of metalworking products including: STANICUT Cutting Oils—STANOSTAMP Compounds—SUPERLA Quenching Oil.

435 TYPES
OF TIGER WIRE ROPE SLINGS

but here is a unique problem that required a special design





THE RIGHT WIRE ROPE WILL DO THE TRICK!



A LEADING eastern railroad wanted one sling capable of handling both 12-cylinder, 26,000-lb. and 16-cylinder, 31,000-lb. diesel engines. This customer had to bring diesel locomotives into a repair shop, lift the engines up out of the locomotives, and carry the engines to another part of the shop. Head room was limited, and the engines had to remain level while being moved.

Tiger Brand Wire Rope Engineers solved this tough problem with a special Tiger Sling which consists of a 13-ft. steel spreader beam suspended from 1½" Tiger Brand 6 x 19 Wire Rope. The horizontal angle of the sling legs is 37½°—leaving about a foot of clearance, with the crane hook at the top of its travel. The sling is giving excellent service.

Ordinarily, you can find just the sling you need among the 435 standard types of Tiger Wire Rope Slings. But, when you run into a special job such as this railroad did, we can help you design a suitable sling. Simply get in touch with the nearest Tiger Brand Wire Rope Distributor for any type of sling or wire rope.

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION
GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO · TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS AMERICAN TIGER WIRE ROPE SLINGS

Excellay Preformed

USS

UNITED STATES STEEL

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For More Information Circle No. 148 on Inquiry Card—Page 17

another case

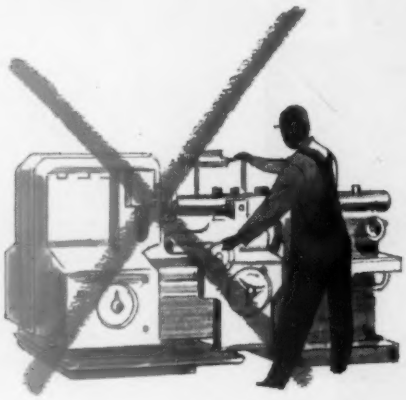


where welded steel tubing does the job best...



From lengths of 2½" ELECTRUNITE Welded Steel Tubing to finished flash-hider being made for the Army Ordnance Corps by Will-o-Hill Industries, Willoughby, Ohio.





Cost Cut 92%!

Electrunite Welded Steel Tubing can run up interesting cost savings for you, too

● These flash-hiders for 20-mm. machine guns were formerly turned out of 3" solid bar stock. Cost was terrific, production rates were low, scrap generation was appalling. In other words, flash-hiders were really being made the hard way.

Using some top-flight native ingenuity, plus lengths of ELECTRUNITE Welded Steel Tubing, 2½" diameter, Will-o-Hill Industries, Inc., Willoughby, Ohio, now make flash-hiders for the Army at a breath-taking fraction of their former cost, and with *no scrap loss*. They are turned out faster, too, with less-skilled help, on low-hourly-cost punch presses, instead of on costly lathes.

ELECTRUNITE Welded Steel Tubing is successfully taking major deformation that even we never dreamed it would stand. What's more, Will-o-Hill report practically no spoiled or rejected pieces.

Does this give you ideas about using ELECTRUNITE Welded Steel Tubing in your products . . . to cut material and production costs, speed production, and produce better parts? We'd like to show you what's being done. And help you switch to ELECTRUNITE Welded Steel Tubing.

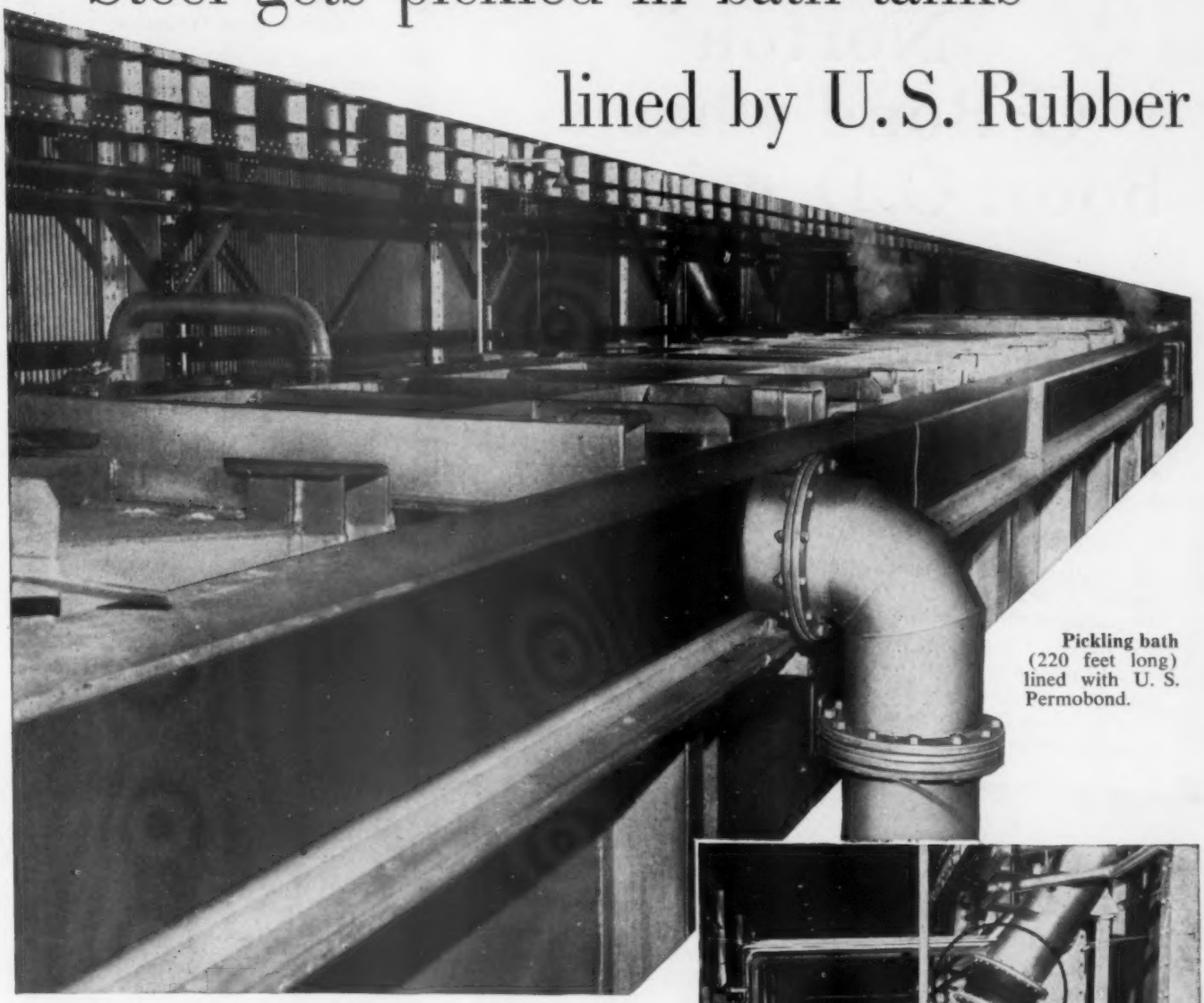
REPUBLIC STEEL CORPORATION
STEEL AND TUBES DIVISION
224 EAST 131st STREET • CLEVELAND 8, OHIO

Republic REPUBLIC STEEL

ELECTRUNITE TUBING

For More Information .Circle No. 149 on Inquiry Card—Page 17

Steel gets pickled in bath tanks lined by U.S. Rubber



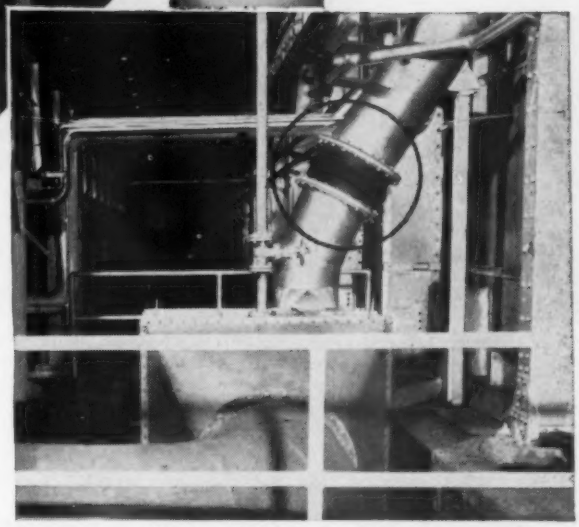
Pickling bath (220 feet long) lined with U. S. Permobond.

Many steel plants handle the hot corrosive acids used in pickling operations by means of tanks lined with Permobond, a product made and installed by United States Rubber Company. Without this rubber, the hot acids would "eat" and corrode the metal tanks.

Typical is this large Midwestern steel plant. The complete pickling unit, acid bath tanks and covers, rinse tanks, fume exhaust system, including a large stack, are all "Permobond-protected."

This steel plant also uses U. S. Expansion Joints to counteract expansion and contraction in pipe lines forming the duct system. And to provide flexibility, U. S. Pilot Flexible Pipe is used in the downcomers.

The "U. S." complete engineering service which designed, accurately fabricated, and Permobond-lined the many complex weldments into a finished, efficient pickling line is available to all industry. Consult any of our 25 District Sales Offices or write to address below.



Duct system lined with U. S. Permobond conveying sulphuric acid fumes to outside of plant. Note U. S. Expansion Joint at right.

"U. S." Research perfects it.
"U. S." Production builds it.
U. S. Industry depends on it.

US RUBBER

UNITED STATES RUBBER COMPANY
MECHANICAL GOODS DIVISION · ROCKEFELLER CENTER, NEW YORK 20, N. Y.

Hose • Belting • Expansion Joints • Rubber-to-metal Products • Oil Field Specialties • Plastic Pipe and Fittings • Grinding Wheels • Packings • Tapes Molded and Extruded Rubber and Plastic Products • Protective Linings and Coatings • Conductive Rubber • Adhesives • Roll Coverings • Mats and Matting

For More Information Circle No. 150 on Inquiry Card—Page 17

More proof of how

Norton G Bond wheels boost O.D. grinding profits

Users praise "TOUCH of GOLD" performance that steps up production rate and quality while cutting costs

Users' Reports on Cylindrical Grinding

"*G Bond wheel* gave 50% more pieces per dressing, with greatly improved finish."

"*Grinding to .001"* limits, G Bond wheels removed stock faster, more uniformly. Gave more pieces per dress, with less spark-out time."

"*Cooler cutting*, crush-trues nicely, holds form. Best wheel ever used."

"*Ground sixty .075"* radius grooves per dressing, compared to 25 with previous wheel. This G Bond wheel, also used on critical shoulder job, held form and gave superior finish."



Cylindrical Grinding is faster, easier, more profitable when wheels made with the Norton G Bond — most efficient vitrified bond ever developed — add the "Touch of Gold."

Users' Reports on Centerless Grinding

"*G Bond wheels* produced better form and finish than any other wheels. Gave 50% more pieces per dressing on both rough and finish grinds. Also eliminated previous distortion of work due to overheating."

"*Dressing required* only once every 4 hours, instead of every 40 minutes. Best general purpose wheel ever used on our centerless machines."

"*Cut faster and freer,* held size better and gave better finish than previous standard wheel."

"*G Bond wheel* gave 16 hours longer wheel life and produced much better finish."



Centerless Grinding benefits by the G Bond's unique ability to hold each abrasive grain just long enough for maximum cutting action — an important "Touch of Gold" advantage.

New users are quick to recognize these advantages of G Bond wheels for O.D. grinding:

Cooler cutting action . . . faster stock removal . . . better finish . . . more pieces per dressing . . . longer wheel life . . . easier dressing, with less wear on diamond or on roll.

Added up, all these advantages mean valuable production economies and improvements in your product. That's why G Bond users have been glad to show their appreciation — with a steady stream of endorsements like those reproduced here.

Your Norton Distributor

is ready with proof of how G Bond wheels can add the work-speeding, profit-increasing "Touch of Gold" to your own cylindrical or centerless grinding jobs. Or write to NORTON COMPANY, Worcester 6, Mass. Distributors in all principal cities, listed under "Grinding Wheels" in your classified 'phone directory. *Export:* Norton Behr-Manning Overseas Incorporated, Worcester 6, Massachusetts. W-1577

Making better products . . . to make other products better

NORTON

and its BEHR-MANNING division

NORTON: Abrasives • Grinding Wheels • Grinding Machines • Refractories
BEHR-MANNING: Coated Abrasives • Sharpening Stones • Pressure Sensitive Tapes

For More Information Circle No. 151 on Inquiry Card—Page 17



Not when you use KIMPAK* 301 !

New KIMPAK 301 is the practical solution for safe packaging of industrial chemical samples. The high absorbency feature of KIMPAK 301 plus its built-in shock absorbing characteristic make it the ideal protective agent in fragile industrial chemical packs. And KIMPAK 301 costs no more than ordinary interior packaging materials. KIMPAK 301 protects against the two major causes of breakage:

1. Shock and rough handling. Because of KIMPAK's shock absorbing properties it is an effective cushion against these shipping hazards.

2. Movement of contents within the package. KIMPAK 301 is absolutely uniform in thickness and texture from end to end and edge to edge. This assures a tight, snug pack, with the fragile containers nestled into the KIMPAK to prevent movement or vibration.

Breakage is but *one* of the problems encountered in chemical packaging. Specify new KIMPAK 301 and these problems are solved—at lower cost. For more details, contact the KIMPAK distributor in your area or mail coupon below to Kimberly-Clark Corp., Neenah, Wisconsin.

SPECIFY KIMPAK 301 TO SOLVE THESE INTERIOR PACKAGING PROBLEMS:

Leakage
Breakage
Conformability
Ease of handling
Appearance
Cleanliness

Whatever your protective interior packaging requirements, there is a Kimpak specification that does the job... better!

KIMPAK INTERIOR PACKAGING
*T. M. REG. U. S. & FOREIGN COUNTRIES

A Product of **Kimberly-Clark**

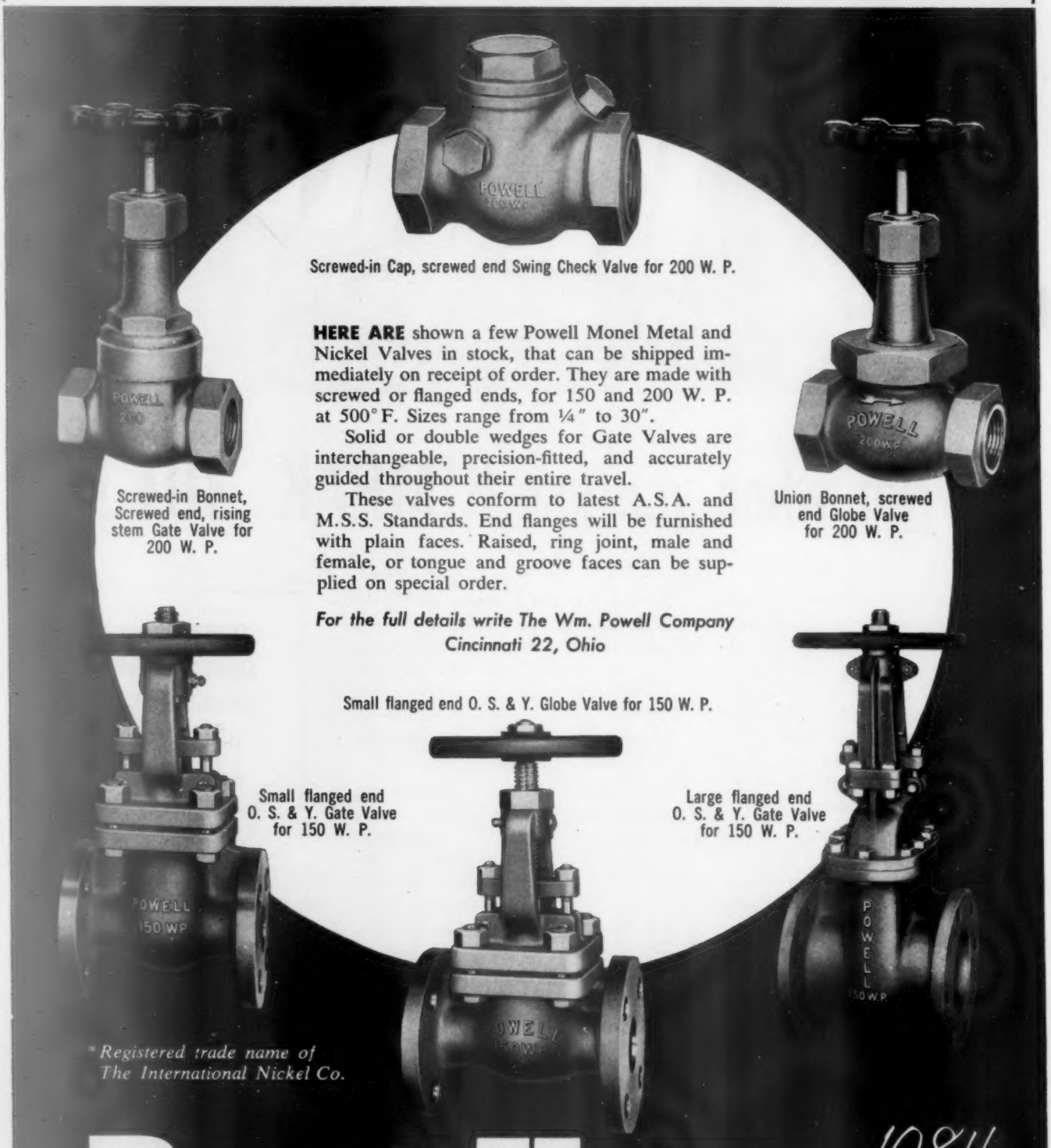
KIMBERLY-CLARK CORPORATION
Neenah, Wisconsin
We would like to learn how new KIMPAK 301 can provide better protection at lower cost for our products. Please send complete information.

Name.....
Firm Name.....
Street Address.....
City..... *Zone*..... *State*.....

For More Information Circle No. 152 on Inquiry Card—Page 17

NOW! For Immediate Delivery!

MONEL* and NICKEL VALVES



Screwed-in Cap, screwed end Swing Check Valve for 200 W. P.

Screwed-in Bonnet, Screwed end, rising stem Gate Valve for 200 W. P.

Union Bonnet, screwed end Globe Valve for 200 W. P.

HERE ARE shown a few Powell Monel Metal and Nickel Valves in stock, that can be shipped immediately on receipt of order. They are made with screwed or flanged ends, for 150 and 200 W. P. at 500° F. Sizes range from ¼" to 30".

Solid or double wedges for Gate Valves are interchangeable, precision-fitted, and accurately guided throughout their entire travel.

These valves conform to latest A.S.A. and M.S.S. Standards. End flanges will be furnished with plain faces. Raised, ring joint, male and female, or tongue and groove faces can be supplied on special order.

For the full details write The Wm. Powell Company
Cincinnati 22, Ohio

Small flanged end O. S. & Y. Globe Valve for 150 W. P.

Small flanged end O. S. & Y. Gate Valve for 150 W. P.

Large flanged end O. S. & Y. Gate Valve for 150 W. P.

*Registered trade name of The International Nickel Co.

Powell Valves

108th year

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Which Truck is Best for Your Needs?

GAS TRUCK	ELECTRIC TRUCK	DIESEL TRUCK	LP-GAS TRUCK	HAND LIFT TRUCK

Yale Makes Them All!

. . . and there's a Yale Truck with the capacity you need from 1000 to 100,000 lbs.

YALE has a Truck with fuel, capacity, and interchangeable attachments . . . exactly suited to your particular handling needs. And, every YALE Truck is quality built . . . designed to save time, space, manpower . . . slash handling costs as much as 75%.

OPERATOR TRAINING TO FIT YOUR REQUIREMENTS

can mean reduced maintenance costs, longer truck life, and substantial production economies through proper use. Ask our representative about this comprehensive YALE service . . . and ask him about the new Finance-Lease Plan for acquiring YALE equipment.

SHOWN HERE ▶

is a YALE Fork Lift Gas Truck. It maneuvers smoothly in close quarters . . . stacks heavy loads ceiling high.



YALE*

INDUSTRIAL LIFT TRUCKS AND HOISTS

Gas, Electric, Diesel & LP-Gas Industrial Trucks • Worksavers • Hand Trucks • Hand & Electric Hoists • Pul-Lifts

For More Information Circle No. 154 on Inquiry Card—Page 17

More than meets the eye

P-K Socket Screws, at a glance, may look substantially like those you buy from "habit." You have to "look *beyond* the hex" for the difference.

If you don't, you are buying with a "blind spot" that can block your way to *proved* benefits other buyers are using to advantage. Parker-Kalon's exacting Quality Control is only one of the advantages you don't see until you "look beyond the hex."

Look Beyond the Hex

Compare every detail of product and service. Compare for advanced design . . . for proved assembly strength . . . for buying aids, and supply service. Get all the facts, and try P-K Socket Screws. You'll find they take top rating in any test.

Get samples, information from your P-K Distributor, or write: Parker-Kalon Division, General American Transportation Corporation, 200 Varick Street, New York 14, N. Y.



Two of the many steps in the exacting P-K Quality Control routine are illustrated. Left, the metallograph test to check metal structure, and right, the Magnaflux inspection, employing "black light" to reveal any defects.

FOR TOP QUALITY and tolerance gaged to your most exacting specifications — and guaranteed.



FOR ADVANCED DESIGN that speeds assemblies — makes them simpler, stronger — and saves errors.

FOR ASSEMBLY STRENGTH okayed in a million punishing tests by thousands of satisfied users.

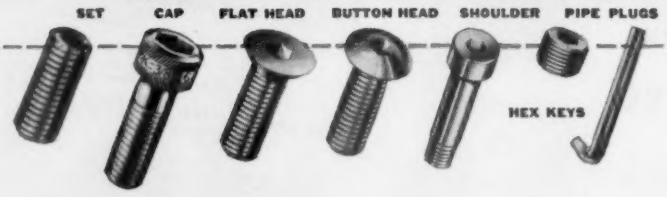
FOR PLANNING AIDS and buying data patterned to your special needs, plus advice on assembly.

FOR SUPPLY SERVICE set up for fast action and lower purchasing expense — by local Distributors.

FOR ANY STYLE OR SIZE You'll find any Socket Screw you need in P-K's complete line. Hex Keys in all sizes, and several handy sets.

PARKER-KALON SOCKET SCREWS





GET ALL THESE ESSENTIALS OF COST-WISE ASSEMBLY GET P-K

In Stock . . . see your nearby P-K Distributor . . . your local Supply and Service Specialist

For More Information Circle No. 155 on Inquiry Card—Page 17



This Point is Not Exaggerated

Spare the rod (quality-wise), and you may spoil the brain-child of the product designer.

This point is well taken by many manufacturers who fabricate Brass Rod into component parts for pens and pencils, clocks, lamps, electric and plumbing fixtures, screw machine parts, and what have you. And that's why so many of these manufacturers are what you might call "confirmed addicts" of Bristol Brass Rod.

In pencils, for instance, Bristol "pencil point rod" makes it possible to drill a more concentric hole, with much better uniformity. And all shipments of *all* Bristol Brass Rod have the same clean surface, uniform gage, and high machinability. (You can say that *again*, about Bristol Brass strip, coil and wire.)

Try it out for yourself. Bristol Sales Engineering Service is airborne . . . at your service any time you say.

THE BRISTOL BRASS CORPORATION

has been making Brass strip, rod and wire here in Bristol, Connecticut since 1850, and has offices and warehouses in Boston, Chicago, Cleveland, Detroit, Milwaukee, New York, Philadelphia, Providence, Rochester. The Bristol Brass Corporation of California, 1217 East 6th St., Los Angeles 21. The Bristol Brass Corp. of Ohio, 1607 Broadway, Dayton.

"Bristol-Fashion" means Brass at its Best

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ACCO products

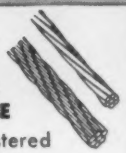
R-P & C VALVES



Bronze, Electric Iron & Cast Steel Valves and Steel Fittings

R-P & C VALVE DIVISION

TRU-LAY Preformed WIRE ROPE



ACCO Registered Wire Rope Slings, Crescent Non-Preformed Wire Rope

AMERICAN CABLE DIVISION

PAGE CHAIN LINK FENCE



Welding Wire, Shaped Wire, Manufacturers' Wire

PAGE STEEL & WIRE DIVISION



AMERICAN CHAIN

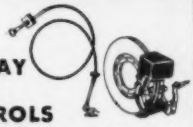
Weed Tire Chains, Welded and Weldless Chain, ACCO Registered Sling Chains

AMERICAN CHAIN DIVISION

These and Other Acco Products Offer Better Values

• Acco products are designed and manufactured to be "intentionally better." They are used directly, or as component parts in a wide variety of products and machines. They help do many jobs better. 16 Divisions of the American Chain & Cable Company manufacture more than 100 essential products.

TRU-LAY CABLE CONTROLS



Aircraft Cable, Push-Pull Controls, Tru-Stop Brakes for Trucks and Buses

AUTOMOTIVE AND AIRCRAFT DIVISION

LAY-SET Preformed WIRE ROPE



Nonparell Non-Preformed Wire Rope

HAZARD WIRE ROPE DIVISION



HELICOID PRESSURE GAGES

HELICOID GAGE DIVISION

MANLEY AUTOMOTIVE EQUIPMENT



Presses, Jacks, Wrecking Cranes, etc.

MANLEY DIVISION

FORD HOISTS



Hand and Electric Hoists

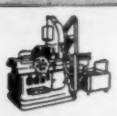
FORD CHAIN BLOCK DIVISION



PENNSYLVANIA LAWN MOWERS

Power and Hand Mowers

PENNSYLVANIA LAWN MOWER DIVISION



CAMPBELL MACHINES

Wet Abrasive Cutting Machines, Nibbling Machines

CAMPBELL MACHINE DIVISION

"ROCKWELL" and TUKON HARDNESS TESTERS



WILSON MECHANICAL INSTRUMENT DIVISION

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For More Information Circle No. 157 on Inquiry Card—Page 17

Specialist or Generalist

IT IS characteristic of the purchasing man's job that he generally has to deal with a large variety of different commodities and products. He may concentrate on a few, and he acquires a working knowledge of others through the act of buying, but he still has the additional responsibility of spending his company's money for many more items that are necessarily less familiar. The observation, commonly made by salesmen and plant and technical men, that the buyer cannot possibly be an expert specialist on all the things he buys—in contrast with the sales or operating man who is concerned with but a few—has considerable validity. But it does not have the significance that the comment implies.

The competent purchasing man is primarily a specialist in his functions of evaluation and procurement. In these fields, which are the heart of his responsibility, he stands apart from other specialists. These traits and training teach him, among other things, intelligent reliance on the commodity specialists in the line organization of his own buying staff, among the technical and operating departments of his company, and the informed representatives of reliable suppliers. They teach him, too, to evaluate these sources of information, often resulting in a more accurate—and certainly more objective—appraisal of commodities than if personalities and motives were more closely involved. They guard him against that curse of specialization by which a man "learns more and more about less and less, until eventually he knows practically everything about practically nothing."

His functional specialization and responsibility give him a broad and objective view of products in terms of their value and relative importance in end use —factors that are frequently lost sight of in too close contact with detail and traditional practice. His necessary consideration of total material requirements is unique among all industrial activities.

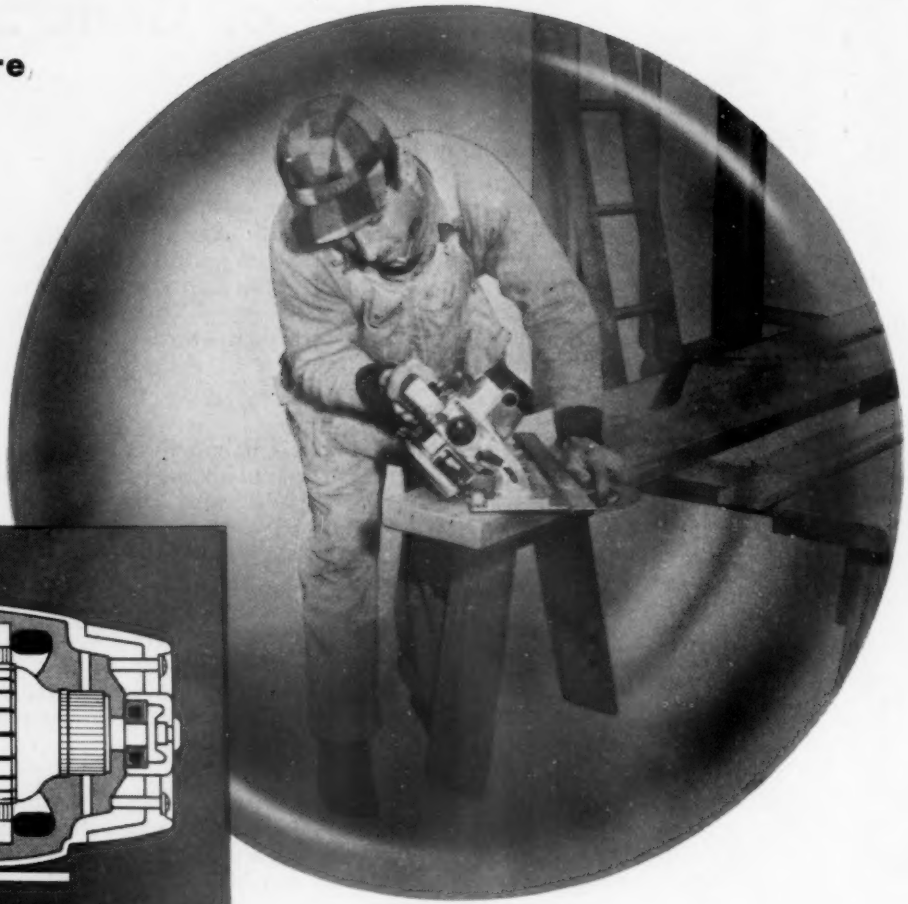
So the purchasing specialist must be, at the same time, a generalist in respect to over-all purposes and results, and trends, and profitable company operation, directing his specialized purchasing activities to these ends. This viewpoint is the mark of the valuable staff man, contributing to company policy and profits. More and more managements are viewing the purchasing function in this light, and are demanding that sort of service from their purchasing departments as an integral part of management.

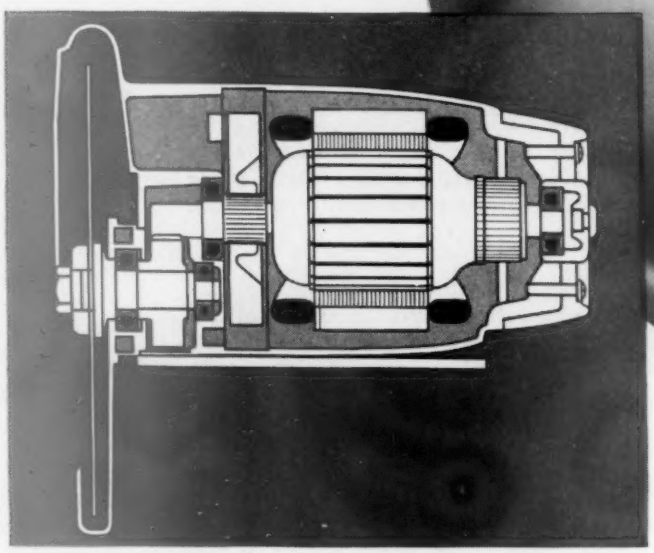
Forward looking purchasing agents will not slacken their efforts toward improving their knowledge of the things they buy. But they will bend their most earnest efforts toward becoming specialists in procurement and materials management, and generalists in adapting and applying this knowledge and skill to their broader company responsibilities.

Stuart F. Heinritz

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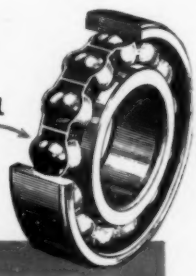


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NEW YORK	1775 Broadway	Circle 6-1540	**INDIANAPOLIS**	1357 W. 18th St.	Imperial 4680	**LOS ANGELES**	5035 Gifford Ave.	Logan 8-2301
PHILADELPHIA	850 E. Luzerne St.	Garfield 3-4136	**PITTSBURGH**	Cathedral Mansions	Mayflower 1-8100	**BERKELEY**	1716 Fourth St.	Landscape 6-8750
SYRACUSE	2360 James St.	73-5195	**CHICAGO**	332 So. Mich. Ave.	Wabash 2-5875	**SEATTLE**	5000 First Ave., S.	Lander 5920
			DAVENPORT	2212 E. 12th St.	Davenport 7-7522			

For More Information Circle No. 158 on Inquiry Card—Page 17

Highlights

This issue's important features summarized for the busy reader



Ever since centralized purchasing has been adopted as a policy of industrial management, there has been a tendency to let purchasing develop its own principles of organization, its administrative tools and procedures, to fit the function. More recently it is being recognized that purchasing administration is in fact just another application of **Industrial Engineering**, and that the proved tools and techniques of that science can be effectively used in procurement activities. An increasing number of today's purchasing executives are being drawn from the industrial engineering field. One of these men, heading the purchasing division of a progressive western manufacturing firm, tells how these techniques can be applied for better buying. Turn to page 79.

Do you assume, when a vendor returns your acknowledgement form, that he has **Accepted Your Order?** The law says that this is not necessarily the case, and unless you make sure that you really have an acceptance, you may find yourself in an embarassing position on some critical commitment. The article on page 92 brings you up to date on this important point of law. More legal information on page 118.



The National Stockpile of critical and strategic materials was conceived as a defense measure and as a safeguard for emergency requirements. Beyond that, it has had a far reaching effect on the whole economy of supply and markets. What are the current objectives and policies of this program? Our Washington editor went to the top man and asked the questions that you would like to have answered. For a report on his interview, turn to page 98.

Simplified forms and procedures, that get essential jobs done more efficiently, with less paperwork, are the aim of every purchasing department. One example that has achieved excellent results is the **Combination Form** illustrated on page 96, by which quotation inquiries and the resulting purchase order are prepared at a single typing, using snap-out forms and strip carbons to implement a unique new procedure. Other tips on Methods, based on actual purchasing experience, appear on pages 72 and 87.

This month's **Guest Editorial** (page 77) is contributed by Frank E. Whyte, Manager of Purchasing for The Carborundum Company and Vice President of the National Association of Purchasing Agents for District 8. His theme is the buyer's responsibility for public relations—and how to meet that responsibility.



A practical technique in building and maintaining good public relations is the **Welcome Folder** or booklet, used by many purchasing departments in receiving business callers. It's a functional device, but affords scope for originality both in content and attractive presentation. The picture story on page 94 illustrates some of the interesting examples of such folders that have recently come to our attention. They may contain some features that you can adapt to your reception procedure.

Shell Molding is one of the newer foundry techniques that has made a useful place for itself among metal working methods for specific products and purposes. It may be the answer to one of your problems. Get acquainted with this process through the description and illustrations on page 88.

Office Duplicating Machines are convenient and economical tools for producing scores of internal forms and communications. What kind of duplicator should you use? The article on page 175 explains the two basic processes and summarizes what is available in the market for your selection, with salient features of each.

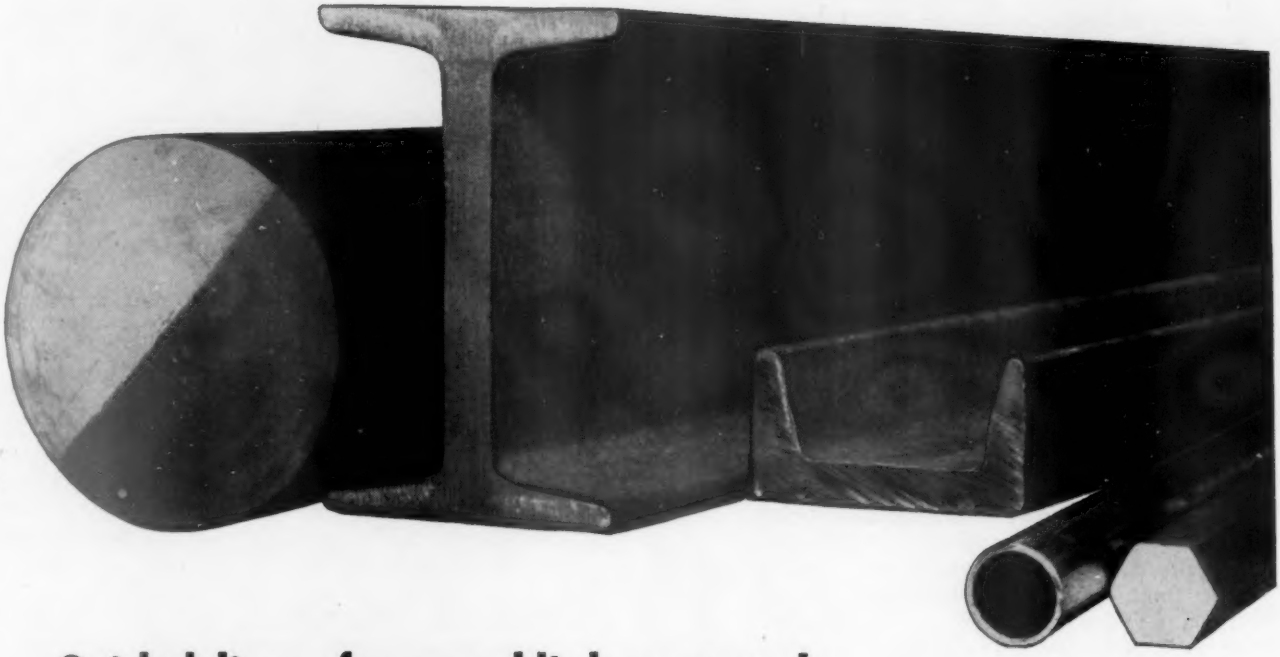
Don't overlook these regular monthly departments, compiled for your information: the Washington Report (page 13); New Catalogs (page 17); New Equipment and Products (page 130); News of Your Suppliers (page 22), of Association Activities (page 184), and of Men in Purchasing (page 224). Keeping up to date on such developments makes for better buying.

COMING—IN NEXT MONTH'S ISSUE

Control of Purchasing Department Costs—Modernization Pays Its Own Way
Electronic Weighing—Using the Learning Curve——Cutting Inventory Time



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Whether you need a single piece or a truckload you can depend on prompt, personal service from your nearby Ryerson plant. So, for every kind of steel—when you need it—call Ryerson.

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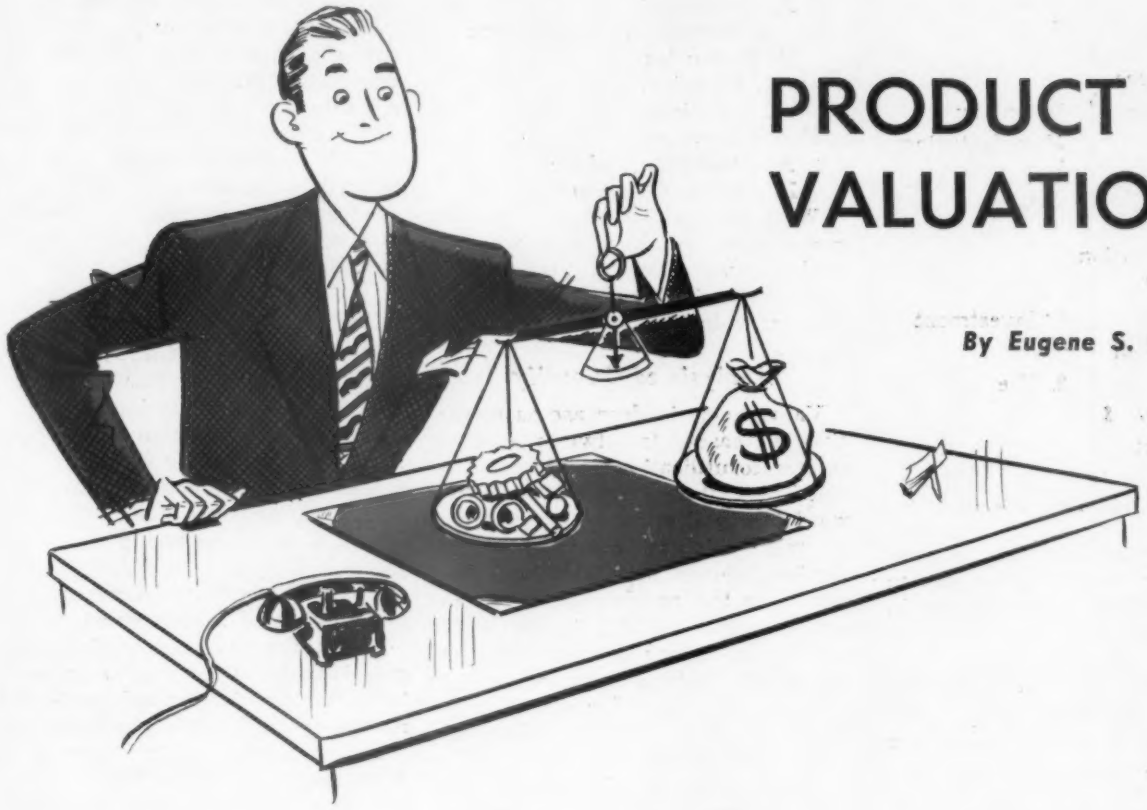
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Purchases are made for a purpose



PRODUCT VALUATION

By Eugene S. Page

THE VALUE of anything is in what it will *do*.

In certain applications, stainless steel is worth more than ordinary carbon steel as its particular properties, such as corrosion resistance, provide superior performance. However, for other uses where these properties are not needed, stainless steel is not worth more than carbon steel, even though it may cost more.

An explosion proof electric motor has infinitely more value than an open motor in a petroleum refinery, but not in an ordinary machine shop.

In both these instances, relative value has no relation to relative cost. It is only a reflection of relative performance when the special properties and abilities available are actually utilized.

In the final judgment, the real worth of products and services depends entirely upon what they will do, *provided that*:

1. The performance, actual or potential, is necessary and/or desirable, and

2. The performance is obtained efficiently from the most economic source.

Investigation of these items is called "Value Analysis".

On this basis, the purchasing agent and the salesman are faced with the problem of the determination of Value. Since this is both variable and intangible, its measurement is difficult. The only available standard of comparison is the medium of exchange between buyer and seller —that is, *Money*.

Of course, in each transaction, there are opposing viewpoints:

The Buyer seeks a product or service that will meet his minimum performance requirements in an efficient, economic manner—in exchange for the minimum amount of money.

The Seller offers a product or service that efficiently meets minimum performance requirements—at a price which will provide the maximum net return in the sale of this and similar items over a reasonable period of time. In his determination of the most profitable conditions obtainable, he must consider the interrelated factors of cost, quality, quantity, and price.

The common problem is Product Valuation. Remember that the value or worth of a product or service—manufactured, purchased, or sold—is a matter of opinion. What are the prime factors which influence and establish this opinion? To summarize, the determination of value involves critical appraisal of:

A. Four basic factors:
   1. Purpose
   2. Quality
   3. Quantity
   4. Availability

B. Relative costs, considering each of these factors, in terms of:
   1. Acquisition
   2. Manufacture
   3. Utilization

C. Return on expenditure

The initial criterion in this appraisal, of course, is the purpose which the product or purpose will serve, and the importance and urgency of this requirement. Every item will be included in one of the following classifications:

I. Business Operations
   A. Production

1. Materials	Inventory
	Manufacturing
2. Commodities	Use
	Sale

B. Supply

1. Power	Inventory
	Manufacturing
2. MRO[1]	Use
	Sale

C. Services

1. Subcontract	Inventory
	Manufacturing
2. MRO[1]	Use
	Sale

II. Capitalization

A. Land and Buildings	1. Investment
B. Construction	
C. Machinery & Equipment	2. Use

[1]Maintenance, Repair, Operating

The importance of the purpose for which the commodity or service is required will be a large factor in establishing its value. This will also influence the time and effort which the purchasing agent and salesman will devote to the appraisal of value, the improvement of quality, and the reduction of cost.

Analysis of Quality

Secondly, the value of anything is related directly to its quality, to the extent that this quality is (a) required, and (b) efficiently used.

But what is quality? Here also is an intangible element, influenced basically by the total purpose or performance required. The quality of the most expensive limousine is no better than that of the lowest priced car, if transportation from point to point is all that is required or desired. However, if the requirement is comfortable riding with ease of handling, the safety of well engineered machinery with additional weight and low center of gravity, a minimum of down time for maintenance, and prestige from appearance—then the costly limousine has greater value as it has more quality than is *required and utilized.* Note that quality differentials have meaning only when the all-important element of performance is understood and is made the product objective.

However, the quality of a product or service has to be defined and specified. This serves in product valuation and in an establishment of the meeting of the minds between buyer and seller. Depending entirely upon the placement of quality responsibility, specifications must be drawn to include any one or a combination of the following descriptive methods:

I. Attributes
  A. Processing
    1. Method of Manufacture
  B. Properties
    1. Chemical
    2. Physical
II. Performance
  A. Ability to produce
  B. Ability to endure

With such a description of the material or product, and what it will do, we have the concept of quality that is essential in adequate product valuation.

Analysis of Quantity

Value tends to decrease as quantity increases, for two reasons—related to utilization and to cost.

1. The unit contribution made toward the total purpose, by any one of many similar commodities or services, almost inevitably will decrease as the number of units required increases. This is the basic concept of marginal effort, or the law of diminishing returns.

A machine shop, for example, is equipped with several identical automatic screw machines. The multiple equipment is needed because the required capacity or output is more than one machine could provide. The machines are identical in cost. However, in such a machine shop through factors related to maximum use and guarantees against stoppage of production, *any one of five* automatic screw machines probably has less value to the owners than would *any one of three.*

To cite another example, two fire engines may give a town twice as much protection as one, for there is an ever-present probability that both would be needed simultaneously to combat fires in different sections of the town. Five fire engines would provide more protection than two, but they would not increase protection another 2½ times, for the probability that this total capacity would be needed at any one time is relatively remote.

Obvious as these examples may be, it is exactly this kind of thing that bears directly upon value.

2. Costs of production and distribution, per unit, are reduced as quantity increases. This is a well known fact in our industrial mass production economy. It is a large factor in unit product valuation.

Here we encounter the old law of supply and demand. Remember that value is largely a matter of opinion. It is the common belief—widely held, that a useful or necessary product that is not readily available is worth more than it would be if it were in good supply.

This opinion is partly psychological—the natural desire for the unattainable. Equally, however, it is a matter of fact, provided that the need or demand is factual. We have already established that value is related to quantity. Anything in short supply is reduced in quantity, and is quite properly increased in value.

Analysis of Relative Costs

Probably the most important element of product valuation is that of relative cost. This includes:

I. Cost of acquisition
  A. By purchase
  B. By manufacture
II. Cost of Utilization
  A. Cost of operation
    1. Output
    2. Efficient performance
  B. Cost of Maintenance

The ultimate criterion in every case is that the commodity or service must provide an adequate net return, or *profit,* on the expenditure.

Today, purchasing is regarded as a money-making activity, which participates in the writing or specifications and the determination of the type and the source or place of mnaufacture. The value of a product is influenced by its cost of acquisition, which, in each instance, depends upon whether it is purchased or manufactured. The cost to obtain it, or to bring it into being, should be the total sum of the costs for materials, labor, efficient overhead, and reasonable profit—consistent with the quality and quantity required.

The alert purchasing agent will contribute much toward an adequate net return on his company's expenditures for acquisitions by making sure that the cost of every important product, service, or component purchased or manufactured has a proper relationship to the financial, physical, and personal resources devoted to its production, and to its part in the total purpose for which it is acquired.

The costs of utilization are relative also. As we have said, value depends upon performance, which includes both the ability to do work and the ability to do it without disproportionate loss of efficiency. In other words, the costs of operation and the costs of maintenance must be as low as possible. Sec-

(*Please turn to page* 284)

American Business and Overseas Public Relations

By Theodore C. Streibert,
Director, U.S. Information Agency



THEODORE C. STREIBERT is well equipped by experience to direct the dissemination of U.S. information abroad. For a period of some twenty years he was a leader in the radio industry, serving as President of Radio Station WOR, New York, and Chairman of the Board of the Mutual Broadcasting System. His government service prior to the present assignment includes membership and acting chairmanship of the Radio Advisory Committee of the U.S. Advisory Commission on Information, since 1949, and consultant to Ambassador Conant in the High Commissioner's Office of Public Affairs, in Germany. He is a graduate of Wesleyan University and Harvard Business School, and was Assistant Dean of the Business School from 1929 to 1933.

BECAUSE American businesses—including the businesses you are a part of—have a tremendous stake overseas, they should organize to do an effective public relations job abroad.

As a purchasing agent, dependent in many cases on foreign sources, you can influence your company in its public relations overseas. In the first place, you have a key spot in those public relations. Often the foreign seller gets many of his opinions and impressions of the United States from the purchasing agent who is his primary contact.

In addition to this direct role, you can also do much to interest your company in joining with other companies in launching a combined public relations program of real impact overseas.

Why is it that I—a public servant engaged in operating your government's information program abroad—put so much emphasis on the public relations activities of private groups abroad?

For one thing, the volume of private contacts far exceeds those by government in most areas abroad. For example, in Latin America, an important materials supplier, your government has a total of only 2,500 Americans on duty. In contrast, there are 80,000 private American citizens living in Latin America who are involved in a myriad of business, professional, and social activities.

However, I'm not impressed merely by the volume of private activity abroad. I believe private American groups can do a particularly effective public relations job overseas. For one thing, people abroad often give more credence to information coming from private sources than to information which has a government label. In addition, private businesses and organizations have a wealth of resources and know-how.

Many American firms are already carrying on effective public relations programs abroad. These have ranged from public service activities in the communities in which they are located to programs aimed at making their overseas representatives better ambassadors of the United States.

But considering the stake business has abroad—that you as industrial purchasers have, for example—I do not believe the effort has been adequate. What is needed is for the principal American companies having interests abroad—whether in investments or materials—to pool their resources and carry on a combined public relations effort.

One subject they might profitably combine on is an educational campaign explaining the benefits of the American private enterprise system. Many people abroad have erroneous notions about our system. They are fearful and suspicious of it. And the

communists are constantly misrepresenting it as a tool of imperialism manipulated by Wall Street.

Information and education demonstrating how this free system works to the benefit of the community and the average working man is badly needed abroad. A rich store of evidence exists on this subject from our own American experience. All that is needed is for more of it to be presented.

The U. S. Information Agency stresses this subject in its information output in important trade areas like Latin America. But it can do only a small part of the job, since its primary tasks are to support and explain American policy and expose communism. Economic education abroad is certainly one field in which United States business could and should take the lead.

There are many beneficial results which can flow from private public relations and educational activities. For example, if people abroad have a favorable opinion of the United States and American business, it is quite possible that a closer and preferred relationship can be established which will have beneficial results both for American business and our country as a whole. In the case of a future war, our national security may well depend on satisfactory relationships such as those with key raw material suppliers around the world.

Before describing our cooperation with private American groups, let me briefly describe the activities of the Agency as a whole.

The U. S. Information Agency is a new agency, created in August 1953 to overcome the many problems which had arisen in the past with our information programs formerly carried on by the State Department, Mutual Security Agency, and the Technical Cooperation Administration.

Our job is to carry on a worldwide information program on behalf of the United States. We carry on U. S. information programs in 77 countries of the free world. We use many means of communication—a wireless news service, pamphlets, posters, radio, motion pictures, information centers and libraries, and personal contacts.

By radio, the only means available to us, we reach the captive peoples behind the Iron Curtain.

Since the establishment of the new Agency, many new approaches have been put into effect in these overseas operations and in the use of the many means of communication available in conducting these operations. In addition, there has been a complete internal reorganization, and the President has given the new Agency a clear-cut mission.

Thus, the U. S. Information Agency is not only a new Agency; it

(*Please turn to page* 286)

Building a Vendor File . . . at the Cost of a Postcard

By Gerald A. Schwarz, Purchasing Department, Revere Corporation of America, Wallingford, Conn.

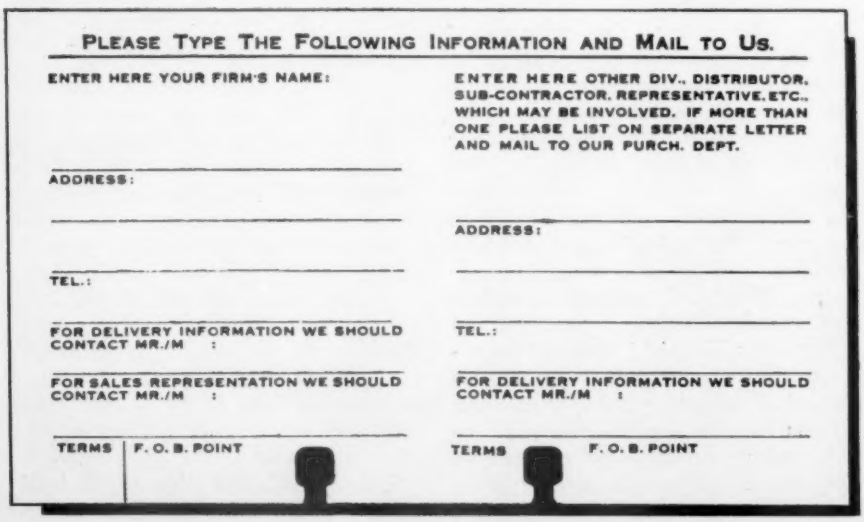
VENDORS receiving orders from the Revere Corporation of America during the past few weeks have found enclosed a printed government postcard with the request: "Please type the following information and mail to us."

The information requested comprises the firm's name, address, and telephone number; names or persons to be contacted for delivery information and for sales representatives; the company's terms and F.O.B. point; and, in a parallel column, the corresponding information for any other division, distributor, subcontractor, etc., that may be involved in dealings with the company. In short, it's a complete and up-to-date card entry for that very useful purchasing department record —the vendor file.

Will the vendor fill out such a form and mail it back? Revere's experience has been a 100% return. All but a very few of the cards were typed as requested. The hand-written ones were completely legible and usable. In a few short weeks, by this ingenious device, the purchasing department compiled essential working information that had not been previously available, and that, in some cases, had been hard to get except through special effort.

When the cards are returned, two slots are punched in the lower edge, and they are placed in alphabetical order on a Rolodex file for instant and convenient reference.

Total cost of this survey and record does not even involve a special mailing—simply the price of as many two-cent postcards as you want, printed to order, one Rolodex file with special punch.



PLEASE TYPE THE FOLLOWING INFORMATION AND MAIL TO US.

ENTER HERE YOUR FIRM'S NAME:

ADDRESS:

TEL.:

FOR DELIVERY INFORMATION WE SHOULD CONTACT MR./M :

FOR SALES REPRESENTATION WE SHOULD CONTACT MR./M :

TERMS | F. O. B. POINT

ENTER HERE OTHER DIV., DISTRIBUTOR, SUB-CONTRACTOR, REPRESENTATIVE, ETC., WHICH MAY BE INVOLVED. IF MORE THAN ONE PLEASE LIST ON SEPARATE LETTER AND MAIL TO OUR PURCH. DEPT.

ADDRESS:

TEL.:

FOR DELIVERY INFORMATION WE SHOULD CONTACT MR./M :

TERMS | F. O. B. POINT

A constructive answer to an old problem

How We Tell a Technical Story to Purchasing Agents

By Nat Cannistraro, General Sales Manager, Bettinger Corporation, Waltham, Mass.

One of the age-old complaints of the technical product salesman—a frequent cause of by-passing the purchasing office and creating poor customer relations—is the plea that "purchasing agents don't speak our language". This sales manager views the situation as a problem in communication, and has found a practicable method and answer. From the buyer's viewpoint, it may also suggest a method of approach to a persistent problem by defining the areas of inquiry and understanding that lead to better buying and better vendor relationships.



SELLING highly technical products and services to a relatively non-technical purchasing agent can be a hazardous undertaking for a salesman. While the alert purchasing agent is "on speaking terms" with all the goods and services he buys for his company—no matter how technical they may be—he may not be able to grasp all the little details that make your particular product or service the wonderful buy that it is.

He is, after all, a purchasing agent; he hasn't been trained specifically in engineering, metallurgy, ceramics, or in any of a hundred other technical specialties that his job touches upon. And if he should have some technical background, the chances are likely that he isn't up to date on the very latest advances in any one field, since he must spread himself thin over a wide variety of fields.

All this is well understood by purchasing agents; it is also a fact of life for their opposite numbers in American industry—the men who sell the products and services. Some sales representatives get around the problem of translating their technical stories for purchasing agents by the simplest expedient: they bypass the purchasing agent entirely and go directly to the engineering or research department.

Selling porcelain enamel coatings for highly specialized uses in architecture and industry, we at the Bettinger Corporation don't like this answer. It offers little help for good future relations between ourselves and the purchasing department if we ignore them on our first contact with a prospective customer. Indeed, it can prove to be a definite handicap if we do not create confidence in our product within the purchasing department—and at the earliest opportunity.

Of course, the best reason for seeing the purchasing department first is also the most logical: here is where the orders are written!

If it is agreed, then, that purchasing should be the first port of call for our salesmen—and that it should be kept informed of all developments while the account is being serviced—we are still faced with the problem of explaining our technical

services and products to the non-technical purchasing agent. At this point, I should emphasize how involved a task that can be.

Technical Competence Is Basic

Since the end of World War II, the Bettinger Corporation has found many new uses for ceramic coatings. Its activities have expanded along two lines: architectural applications of porcelain enamel, and industrial and military uses. The latter is the more recent of the two, representing countless possibilities. Due to porcelain enamel's resistance to high temperatures and corrosion, it has been applied successfully as inner linings for industrial furnaces, oil and heating systems, truck mufflers, and other "hot parts". Perhaps its most dramatic application to date has been in high temperature coatings for "hot parts" of jet engines.

The discovery of new and dramatic uses for ceramic coatings is a continuing story. As a result, Bettinger has no set product line and no apparent limit to the new jobs it could and still can do. Much of our work is on a custom basis, involving research with the customer. Our products and services can develop in any of a number of directions. If we insist on seeing the purchasing agent first, how then do we go about developing an easily understood sales presentation?

Our first step toward answering this problem was to retrain our sales staff. We called in our salesmen from all parts of the country for an intensive three-week training course in our main plant and laboratory in Waltham, Mass. For a month before the course started, the men were asked to read certain technical books on metallurgy, ceramics, and other related subjects. The course itself was designed to give them a fundamental grounding in the new uses of porcelain enamel coating which we intended to promote. These revolved closely around the material's resistance to heat and corrosion. So for three weeks our salesmen studied corrosion problems —all the way from the actual problem and inquiry from the prospective customer to laboratory research and putting a conclusion into production.

With a group of well-trained sales people who could hold their own on the highly technical ins-and-outs of their product, we were then ready to put a selling approach on paper.

Here is a rough outline of the selling steps we developed for our salesmen:

1. Make sure the first contact is with the purchasing agent, even if services are requested by research or engineering. Ask for his advice and assistance.

2. Make as non-technical a presentation as you can. A good start would be color slides of the varied work that Bettinger has already done. Use a daylight viewer for this, so as to make the least amount of fuss. Starting in by suggesting that the office be darkened and the normal order of things be otherwise disturbed is an invitation to sales resistance.

(I might add at this point that placing sole reliance on a color slide presentation and an accompanying sales pitch that is memorized can sometimes backfire. The first time I called on an airplane engine manufacturer in 1950, I decided to give color slides and a canned sales talk a trial. Unexpectedly, I was to address an audience of engineers and research men instead of just one purchasing agent. To make matters worse, I couldn't use my daylight viewer and the projector they had wouldn't take the slides. So I just recited what I had memorized, clicking my cricket to signal each change for a non-existent slide. The ensuing question period caught me off balance because I wasn't prepared to answer highly technical questions at that time. I firmly resolved on the spot that a thorough grounding in technical facts was a must before approaching anyone with Bettinger's services.)

3. Emphasize the laboratory and engineering services that Bettinger offers its customers. In addition, make sure to leave with the purchasing agent a meaningful collection of technical material and specimens in the form of photographs and brochures, that graphically illustrate the value of your services.

4. Ask the purchasing agent to set up a meeting between yourself and his company's engineering and research departments. In such a meeting, emphasize that you as a salesman have the authority to commit any of Bettinger's technical facilities and personnel to the customer's use.

5. Invite the purchasing agent, his associates, and any engineers or research men to visit Bettinger's facilities and to inspect our production processes. Impress a prospective customer with the fact that his problem becomes ours from the first.

6. After you have created a desire for Bettinger's services—and the customer's engineering department has approved—try to get the purchasing agent to issue a trial order based on a negotiated price.

This last point is a key one in our dealings with purchasing departments. Bettinger has a unique cost accounting system which allows us to maintain pinpoint control over expenses through every step in the production line. With the aid of a central control and an intercom system, a timekeeper and cost accountant receive and keep a check on the production time spent on each phase of an order. With up-to-the-minute information, we can tell if a particular job is staying within the bounds of its projected costs.

The purchasing agent benefits from our pinpoint accuracy on measuring costs in this way: if we have quoted a certain estimate on a job, he can rest assured that it won't undergo any last-minute changes unless something really unusual crops up. In addition to cutting our own production costs and overhead, our cost accounting system contributes solid understanding and confidence in our dealings with new and old customers.

We have found that our relations with purchasing agents are like a two-way street; as we offer them all our facilities and cooperation on an open and above-board basis, they respond with confidence and their invaluable assistance in clearing the way for us.

The good purchasing agent, we have found, is alert both to the needs of his own production line and the possibilities presented by new products and services. His flexibility of mind makes it possible for companies like Bettinger to develop and introduce important new products and services for American Industry.



"Thanks, Joe, but I can't accept favors from any of our suppliers."

How Serious Is The SMALL ORDER PROBLEM In Purchasing?

Small orders are a problem to many purchasing departments. Cost of handling the order, for example, often exceeds the price of the purchased item. Yet in many cases much depends on the item, and the order must be handled as carefully as a regular order. We asked purchasing agents in industry about the nature and extent of the small order problem, and what they are doing about it. Their combined answers follow.

1 Approximately what percentage of your purchase orders are in the "small order" category

a. $25.00 or less

$25.00 or less

% of orders	% of replies
Up to 10%	48%
11—20%	26%
21—30%	12%
31—40%	9%
Over 40%	5%

b. $10.00 or less

$10.00 or less

% of orders	% of replies
Up to 10%	79%
11—20%	11%
21—30%	7%
31—40%	2%
Over 40%	1%

2 In your opinion, what are the principal causes for small orders

(In order of frequency of mention)
Legitimate emergency requirements
Large number of special requirements
Convenience of local supply sources
Lack of foresight in requisitioning
Inadequate stores and inventory control
Habit
Excessively short inventory policy

3 Have you made any specific effort to reduce the number of small orders



PURCHASING OPINION

5 a. Do you have accurate knowledge of what it costs your company to issue a purchase order ?



b. If answer to 3a is "yes", what is the cost per order

0 – $5	$5+ – $10	$10+ – $15	Over $15
75%	15%	5%	5%

c. If answer is "no", what is your estimate of the cost

0 – $5	$5+ – $10	$10+ – $15	Over $15
83%	12%	4%	1%

6 In your opinion, do small orders significantly increase costs ?

Cost of departmental operations



Cost of purchased products



7 What means have you found effective in reducing the number and cost of small orders ?

(In order of frequency of mention)

1. Education or requisitioning personnel
2. Consolidation of requisitions
3. Calculation of best ordering quantities
4. Inventory control
5. Standardization
6. Blanket orders
7. Simplified procedure for petty cash orders
8. Simplified procedure for emergency orders
9. Simplified procedure for field orders

WHAT THEY SAY

"Our blanket order system and simplified procedure have reduced our small orders over 50%. However, the processing of invoices has not been appreciably affected."

"Sufficient lead time is the best method for overall economy."

"Because of internal controls suggested by accountants and auditors, there will continue to be the problem of small orders. It can best be licked by educating all involved and by using simplified procedures."

"We use verbal procedures for small orders quite extensively, but only through authorized personnel."

"In many cases the routine processing of small orders is cheaper than an elaborate special system devised to process them."

"Past experience has proved that the most effective way to control the small order problem is to designate the direct control of inventory to the Purchasing Department."

"Controlled procedures on petty cash operations can be the dominating factor in reducing the number of small orders."

"We have found that the liberal use of blanket orders, if properly controlled, is an aid in reducing the number of small orders issued."

"The types of operations have a great bearing on the number of small orders required – however, they can and should be controlled for economy's sake."

"The purchasing agent, under normal conditions and with the appropriate authority vested in him, should be entirely capable of controlling the small order problem."

'Education of the plant operating personnel is the main answer to proper requisitioning and control of purchasing in any quantity."

"It would seem that the situation will get worse instead of better because of the emphasis on short inventories."

Purchasing . . . and Public Relations

By Frank E. Whyte



THE purchasing department in the modern business organization has many responsibilities.

Obviously, there are the responsibilities dealing with material requirements and actual purchasing activities. It is charged with procuring the materials and supplies needed for production, and the equipment and tools required. It must secure these at the most favorable terms and costs available, consistent with good business practice. The search for new, better, less costly, and substitute items is assigned to purchasing.

Then there are related functions of administration and policy that are keyed to this flow of materials. Purchasing is expected to be informed, and to act in an advisory capacity on such matters, even though it may not have the direct responsibility for them. Advice is sought from purchasing on inventory control and on the future course of business.

But one important responsibility is too often unrecognized—the purchasing department's responsibility in regard to public relations.

The purchasing department is a vital factor in the public relations activities of a company. Purchasing can add to the stature of the company by its policies and conduct, by the way its buyers interview salesmen, their attitudes and their dealings.

The ten "Standards of Purchasing Practice" endorsed by the National Association of Purchasing Agents

Frank E. Whyte, Vice President of the National Association of Purchasing Agents for District 8, is Manager of Purchasing for The Carborundum Company and its world-wide organization, with his headquarters at Niagara Falls, N. Y. He joined Carborundum in 1949, coming to this position from the office of Director of Purchasing for the Pennsylvania Rubber Company of Jeannette, Pa.

He had previously been with Trans-World Airline, both in Kansas City and Los Angeles, with responsibilities for aircraft conversion procurement, and with Firestone Tire & Rubber Company at Akron, Ohio. In addition to his purchasing activities, he had served for a while as Economics Administrative Assistant and as Assistant Statistician for TWA, as Accountant and Statistician for Firestone, and as Statistical Department Manager for Montgomery Ward & Company.

He is a native of Kansas City, Mo., and had his early schooling in the public and high schools of that city. From there he went to the University of Kansas, where he took the liberal arts courses, later transferring to the University of Missouri, where he graduated with the degree of B.S. in Business Administration. He took his graduate work at the Harvard Business School, graduating with the degree of M.B.A. in 1928.

It was in 1947, while at Jeannette, that Mr. Whyte first joined the Purchasing Agents Association, becoming a member of the Pittsburgh chapter. When he moved to Niagara Falls in 1949, he transferred his membership to the Buffalo Association. There, he promptly took an active part in Association affairs and was put to work in 1950 as Chairman of the Program Committee. He did such an excellent job on this assignment that he was reappointed the following year and elected to the Board of Directors for a three-year term. In 1952 the Association chose him as its President and Alternate National Director. In 1953 he was elected National Director for Buffalo. In 1954 his associates in District 8 elected him to the National Executive Committee as District Vice President—a remarkable tribute to the ability and personality of a man who had come so recently into the Association, and even more recently into the District he now heads.

In his present position he represents, in National councils, the Baltimore, Buffalo, Carolinas-Virginia, Eastern New York, Elmira, Lehigh Valley, New York, Old Dominion, Philadelphia, Reading, Rochester, Syracuse, Washington, D.C., and Wilmington Associations.

He is married to the former Laura Lee Wilcox of Akron, Ohio. They have two daughters, Giboney Grace, 15, and Virginia, 11, and a son, Charles Frank, 3½ years old. Mr. Whyte is a member of the Niagara Club, the Niagara Falls Country Club, the Chamber of Commerce of Niagara Falls, and the Gaveliers of Buffalo. He is deeply interested and active in the work of the Episcopal Church. While in Pennsylvania, with several of his friends, he helped found the St. Michael's of the Valley Episcopal Church near Ligonier. At Niagara Falls, he has been superintendent of Church School for St. Peter's Church, and is a Lay Reader.

Principles and Standards of Purchasing Practice

ADVOCATED BY

National Association of Purchasing Agents

LOYALTY TO HIS COMPANY
JUSTICE TO THOSE WITH WHOM HE DEALS
FAITH IN HIS PROFESSION

From these principles are derived the N.A.P.A. standards of purchasing practice.

[1] To consider, first, the interests of his company in all transactions and to carry out and believe in its established policies.

[2] To be receptive to competent counsel from his colleagues and to be guided by such counsel without impairing the dignity and responsibility of his office.

[3] To buy without prejudice, seeking to obtain the maximum ultimate value for each dollar of expenditure.

[4] To strive consistently for knowledge of the materials and processes of manufacture, and to establish practical methods for the conduct of his office.

[5] To subscribe to and work for honesty and truth in buying and selling, and to denounce all forms and manifestations of commercial bribery.

[6] To accord a prompt and courteous reception, so far as conditions will permit, to all who call on a legitimate business mission.

[7] To respect his obligations and to require that obligations to him and to his concern be respected, consistent with good business practice.

[8] To avoid sharp practice.

[9] To counsel and assist fellow purchasing agents in the performance of their duties, whenever occasion permits.

[10] To co-operate with all organizations and individuals engaged in activities designed to enhance the development and standing of purchasing.

WE SUBSCRIBE TO THESE STANDARDS

are quoted with this article. They are familiar, of course, but they should be periodically re-read and taken to heart by every purchasing man. In addition to being the guiding starts for the purchasing agent in his daily job of buying, they should also serve as a guide for his contribution to his company's public relations program.

Persons dealing with a purchasing department often gain their only impression of a company through that contact. If they are well received, they will regard the company favorably even though no sale may be made. A good public relations job has been accomplished.

The factor that can contribute most—and most effectively—to good public relations is the knowledge, on the part of those who meet and deal with the purchasing department, that the buyers are fair and impartial and are persons of integrity. Nothing can be more damaging to a company's public relations than to have a purchasing department whose fairness or honesty is in question.

N.A.P.A. membership is primarily a professional membership. The Association policy is, through its educational efforts, bulletins and other services, to help every member to do a better purchasing job.

Yet there is another important aspect or consideration that goes right along with this. Through membership in the National Association, the purchasing agent can contribute to good public relations for his company. Through attendance at meetings and participation in committee work and other constructive activities, the company's name is kept before the membership, and often is noted favorably in the public press as a progressive and reliable firm—a good member of the business community, and a good company to do business with.

Industrial Engineering Techniques Applied to Purchasing

By N. A. Lamberti Director of Materiel, McCulloch Motors Corporation, Los Angeles, Cal.

This paper was prepared for the Sixth Industrial Engineering Institute of the University of California, presented in cooperation with the American Institute of Industrial Engineers, American Society of Mechanical Engineers, American Society of Quality Control, and the Society for the Advancement of Management.

INDUSTRIAL ENGINEERING is a relatively new science and profession, whose techniques are applied to give effective, efficient, and economical management. The tools and methods of industrial engineering have been and are being used in many fields. They are particularly numerous and have found their greatest challenge in the operation of manufacturing industries. Here, they are mainly concerned with the production problems of planning, scheduling, routing, time study, plant layout, machine loads, cost studies, and material control.

I am in the unique and fortunate position of having been able to put these methods into effect in the purchasing activities of McCulloch Motors Corporation, having been the chief Industrial Engineer there before being placed in charge of its procurement function three years ago. We have several industrial engineers in the buying and inventory control positions.

The purchasing department in today's modern manufacturing plant represents the greatest area of untapped potential for cost reduction. Many industrial leaders, in attempting to increase their companies' profits, talk of increasing sales, reducing burden, improving methods, utilizing new equipment, etc., but few attach the necessary importance to wise spending.

Consider, for example, the case of a company doing a business of $50 million a year, spending 50% of the sales dollar on purchases, and making a profit of 10% before taxes. It is easy to picture the management of such a company becoming ecstatic about a $10 million increase in sales, and plans and programs are constantly being formulated and executed to increase sales. But does the management of that company devote the same degree of effort and ingenuity to reducing the cost of purchases by $1 million? Probably not—yet the net result, when carried to profit, would be identical. For this company, and many others, a 4% saving in the cost of purchases is just as important, profitwise, as a 20% increase in sales.

From 1950 to 1954, the McCulloch Motors Corporation spent several million dollars in the purchase of several allied manufacturing companies. The Industrial Engineering Department played a very important part in investigations, analyzing and establishing new cost standards, procedures, and policies, in these absorbed corporations. Some of the most critical and common problems encountered in these companies were those dealing with materials.

Our corporation attaches a great deal of importance and emphasis to the purchasing function. McCulloch Motors, at present, spends approximately $1 million per month on materials and services procured from others—55% of the company's standard manufacturing cost is in purchased materials. Yes, the application of industrial engineering techniques of cost analysis, methods improvement, standardization, and organization in the procurement departments could save the company many thousands of dollars every year.

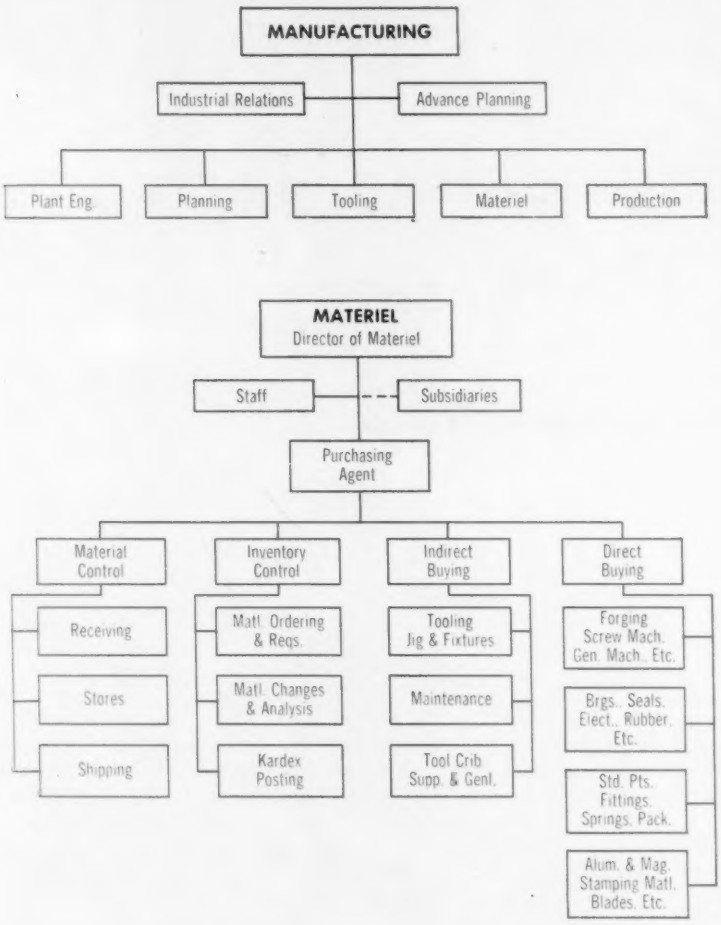
Some of the industrial engineering techniques are more important than others in relation to purchasing, but all are applied in some degree. We shall here discuss six of them.

1. Organization Charts, Job Descriptions and Evaluations

The first item in which industrial engineering training could be effectively used is in drawing up a departmental organization chart. It is a tool which can also be grossly misused. Charts must be intelligently drawn, showing lines of authority and clearly defining individual responsibilities. The relation of the individual in the department, and that of the department to other operating departments, must be shown. Jobs have to be described, evaluated, and rate ranges established to show each employee his relative worth to the company. The proper functioning of a department —and in some cases, an entire plant —can be insured by the careful analysis and placement of the various responsibilities in a corporation organization chart.

In our corporation, the Materiel Department is composed of the following sections:

1. Production Buying.



Organization charts showing how the Material Department fits into the Manufacturing Division and how it is set up to perform its purchasing and control functions.

2. Non-Production Buying.
3. Inventory Control.
4. Receiving.
5. Stores.
6. Shipping.

In other words, this Purchasing Department is responsible for practically the entire material cycle. An important industry trend has been the placement of the Inventory Control and Stores Departments under the Purchasing function.

In the past, material requisitions were issued by the Production Department, whose basic interests were only in getting large quantities of material to keep their machines and personnel busy. Most of the decisions were already made when Purchasing was left to buy the materials. As a result, unused price breaks, single bids, fair quality, poor deliveries, overstocked inventories, overcommitment of materials on order, were the rule and not the exception. In operating by these methods, the purchasing man's hands were tied.

For our particular type of manufacturing, placing all of the above listed sections under the Purchasing Department has resulted in a more efficient and economical operation.

Another of our problems was the drawing of a comprehensive parent corporation - and - subsidiary Purchasing Department organizational chart. There were several subsidiaries to take under consideration. Each had its own relative size and importance to the main plant. Job responsibilities were defined and lines of authority were shown for each purchasing position. A Senior Buyer was in charge of purchasing at one subsidiary, an Assistant Purchasing Agent headed procurement in a second case, while another had a full Purchasing Agent, etc.

A Director of Materiel at the parent plant established and coordinated all of the Purchasing Department's policies and procedures.

Shown herewith are the basic organization charts of the Materiel Department, as part of the Manufacturing Division.

II. Methods and Procedures Improvement

The second management technique to be applied in purchasing is the improvement of departmental methods, procedures, and layouts. All of the department's procedures, forms and systems must be analyzed, improved upon where possible, and placed back into operation. The improvements resulting from these studies save countless hours of clerical work, eliminate red tape and duplication.

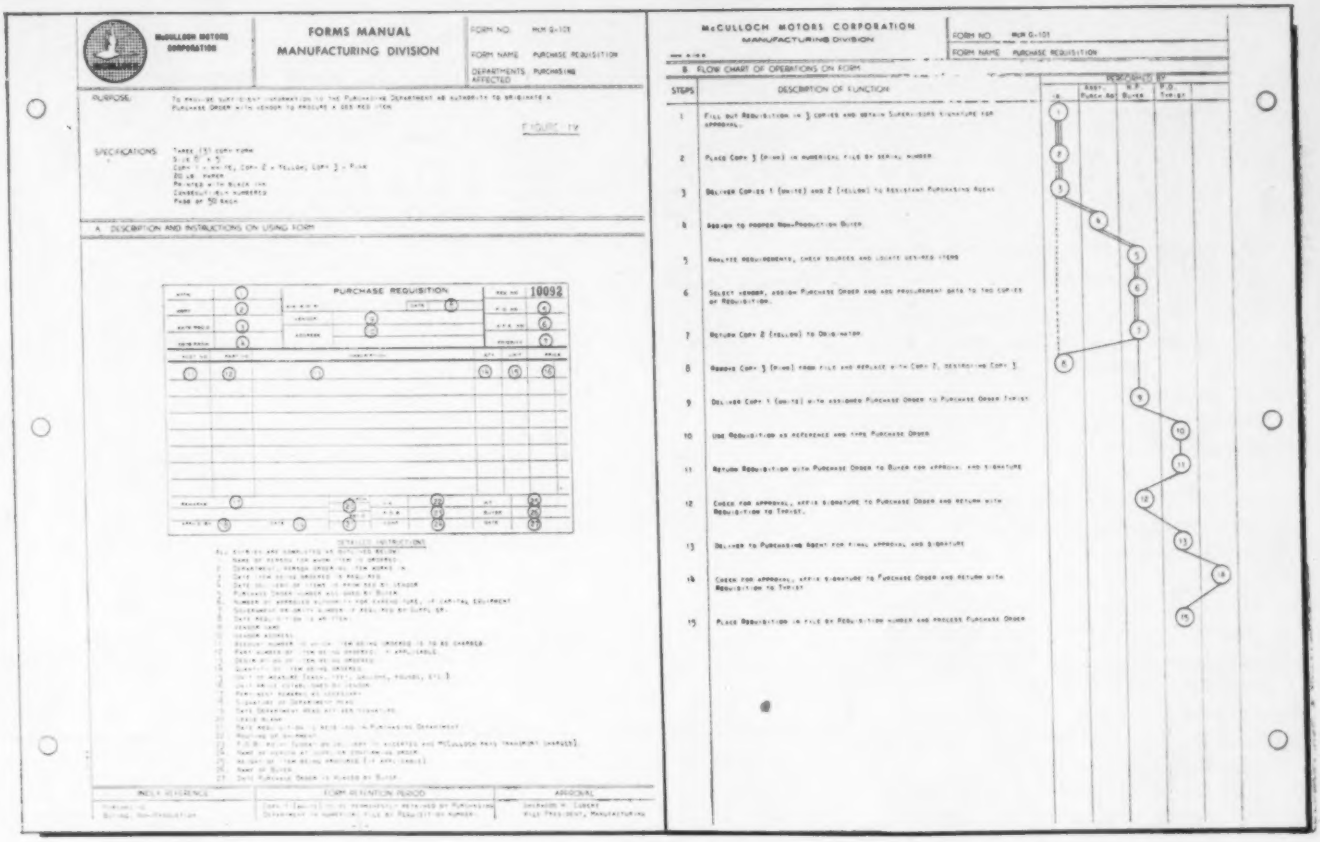
The analysis of procedures brought to light the large quantity and variety of forms passing through the department every month. Table I is a summary of this study, indicating the various sections that are involved in the processing of these forms.

Approximately 50% of all the corporation paperwork is processed in or through the Purchasing Department. It can therefore readily be seen how important the design, control, and flow of procedures actually become. Standard practices and

Table I

Purchasing Department Paperwork

Qty.	Form	Buying	Inventory Control	Rec.	Stores	Ship.
2,000	Purchase Requisition	X	X			
1,600	Purchase Order	X	X	X		
3,800	Receiving Report	X	X	X		
2,500	Stores Requisition		X		X	
3,400	To-Stores Card		X		X	
2,800	Sales Parts Order		X		X	X
1,200	Shipping Report		X			X
10	Bill of Material Issues		X		X	
200	Engineering Changes & Deviations	X	X		X	
200	Invoice	X				



Forms analysis leads to functional efficiency of procedures. Reverse side of analysis sheet is a flow chart showing the detailed processing of the form.

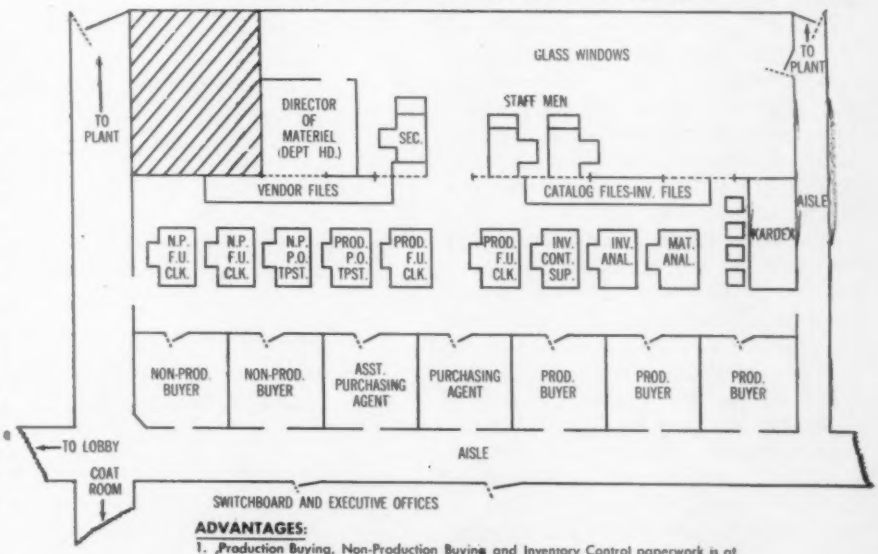
flow charts were set up to follow each form through all its stages of processing, to standardize methods, guide and educate the personnel.

Illustrated herewith is a specimen analysis of paperwork, dealing with the purchase requisition. On the reverse side of this analysis sheet, a flow chart shows the detailed processing of this form through 15 stages. From these individual studies, comprehensive coordinated flow charts have been developed covering major departmental procedures.

Department manuals of forms, responsibilities, and procedures were established for every section of the Purchasing Department. From these records, new personnel could easily be trained in department procedures, and all personnel have a common knowledge as to how the department operates.

Concurrent with the establishment of improved methods, forms, and procedures, the office layout was studied. For greatest efficiency, and to minimize confusion and errors in carrying out everyday activities, it should be planned to allow for the smooth flow of paperwork, adequate work areas and lighting, proper desk arrangement, and centralization of certain functions.

BUYING AND INVENTORY CONTROL SECTIONS LAYOUT



ADVANTAGES:

1. Production Buying, Non-Production Buying and Inventory Control paperwork is at a minimum and all functions are centralized.
2. Buyers accessible to vendors and other department personnel.
3. Inventory Control adjacent to Production buying.
4. Production Follow-up Clerk and Typist are close to Production Buyers.
5. Non-Production Follow-up Clerks and Typist are close to Non-Production Buyers.
6. Purchasing Agent in charge of Production Buying, and Assistant Purchasing Agent in charge of Non-Production Buying, are next to each other.
7. Files are against walls, near pertinent user and away from traffiic.
8. Director of Material has view of entire operations.
9. Staff men are isolated from traffic and are able to plan better.

Proposed revision of Materiel Department layout, designed for maximum convenience and minimum lost motion.

III. Work Measurement and Wage Incentives

The third technique is one that is synonymous with the term Industrial Engineering. The field of work measurement, standards and incentives is at the core of industrial engineering methods.

In order to control the performance and analyze the effectiveness of the Purchasing Department, units of work measurement were set up. Each section has approximately ten or more activities that are measured. A report is written monthly on these operations by the section supervisors. The compilation of this information in each section has accomplished the following purposes for supervisors and workers:

1. Exposed interesting job facts, and given them new job knowledge.
2. Taught them to be more systematic and efficient in fulfilling their duties.
3. Provided work standards to serve as a basis of comparison from which decisions will be made to improve operations.
4. Aided in determining the manpower requirements.

Table II gives some examples of the more important units of work measurement set up in each section of the Materiel Department. A typical report (from the Buying Section) is also shown. These operational statistical data are invaluable to the section supervisors.

We have found from experience that, actually, from two to five carefully selected units of work measurement in each section are enough to give us a true picture of their performance. However, all of the units are measured, for it is hoped with the building of this statistical record that eventually indirect time standards will be set in these sections. If standards are not set, it would still be possible to statistically compare these units with various production figures and arrive at a ratio to be used in a wage incentive plan. That is, in a mass production type of manufacturing such as ours, there is a definite correlation between production labor hours (units and manpower) and the operations of the Purchasing Department sections.

It is relatively simple to calculate

Table II

Representative Data Used in Work Measurement

Section	Unit of Work Measurement
1. Buying (Production and Non-Production)	A. Number of purchase orders processed by buyers B. Number of requisitions processed by buyers C. Dollar volume, by purchase commodities and by buyers D. Purchase price variance from standard
2. Inventory Control	A. Months supply of material on hand and on order B. Dollar value of material on hand and on order C. Number of postings to Kardex. D. Number of engineering changes processed
3. Receiving	A. Number of receiving reports written B. Pounds of material received C. Number of trucks handled at dock D. Number and dollar value of freight bills processed
4. Stores	A. Number of orders filled B. Number of new and back orders on hand C. Number of requisitions and return-to-stores cards filled D. Number of bills of material processed
5. Shipping	A. Number of orders shipped B. Pounds of material shipped C. Number of shippers written D. Number of pickups and deliveries

Statistical analysis of departmental operations.

McCULLOCH MOTORS CORPORATION

DIVISION MANUFACTURING
DEPT. PURCHASING
SECTION BUYING
DATE 12-1-53 NO. B-1358
PROJECT OR PRODUCT GENERAL
SUBJECT PURCHASING DEPT. WORK MEASUREMENT
PAGE 1 OF 1

TITLE OF REPORT STATISTICAL ANALYSIS OF DEPARTMENTAL OPERATIONS

ITEM	UNIT OF MEASUREMENT	QUANTITIES
1	PURCHASE ORDERS ISSUED BY BUYER NO. 1	115
2	PURCHASE ORDERS ISSUED BY BUYER NO. 2	200
3	PURCHASE ORDERS ISSUED BY BUYER NO. 3	175
4	PURCHASE ORDERS ISSUED BY BUYER NO. 4	475
5	PURCHASE ORDERS ISSUED BY BUYER NO. 5	400
6	PURCHASE ORDERS ISSUED BY BUYER NO. 6	250
7	TOTAL NUMBER OF PURCHASE ORDERS ISSUED	1615
8	TOTAL VALUE OF PURCHASE ORDERS PLACED BY BUYER NO. 1	$228,000
9	TOTAL VALUE OF PURCHASE ORDERS PLACED BY BUYER NO. 2	165,000
10	TOTAL VALUE OF PURCHASE ORDERS PLACED BY BUYER NO. 3	90,000
11	TOTAL VALUE OF PURCHASE ORDERS PLACED BY BUYER NO. 4	110,000
12	TOTAL VALUE OF PURCHASE ORDERS PLACED BY BUYER NO. 5	70,000
13	TOTAL VALUE OF PURCHASE ORDERS PLACED BY BUYER NO. 6	180,000
14	TOTAL VALUE OF ALL ITEMS PURCHASED	$843,000
15	DOLLAR VALUE OF PRODUCTION BLANKET ORDERS	150,000
16	DOLLAR VALUE OF NON-PRODUCTION BLANKET ORDERS	25,000
17	PURCHASE PRICE VARIATIONS	10,000
18	PAID PURCHASES FOR MONTH	1,600,000
19	DISCOUNTS TAKEN	8,000
20	OBSOLETE COSTS	5,000
21	NUMBER OF RECEIVERS POSTED TO PRODUCTION PURCHASE ORDERS	2,000
22	NUMBER OF RECEIVERS POSTED TO NON-PRODUCTION PURCHASE ORDERS	2,200
23	NUMBER OF SALARY PERSONNEL - EXEMPT	6
24	NUMBER OF SALARY PERSONNEL - NON-EXEMPT	7

REPORT NO. 1

-10-

Table III

Purchasing Department Efficiency

I. CHARGES		I. CREDITS	
A. Prices paid above std. for material	$ 15,000	A. Prices paid below std. for material	$10,000
B. Department Expense (Salaries, supplies, rent, lighting, phone, etc.)	27,000	B. Savings by substitution	2,000
C. Freight Charges	10,000	C. Salvage Sales	1,000
D. Discrepancies, Losses and Delays..	5,000		
E. Expense of carrying Inventory ($2,000,000)			
Int.	.06		
Obs.	.08		
Det.	.01		
Tax & Ins.	.005		
Rent	.04		
Clerical	.01		
Handling	.02		
Repairs	.01		
Carry. Chgs.	.20		
.20 (2,000,000) ¼ =	100,000		
	$157,000		$13,000

II. Net cost of purchasing = Charges − Credits (per quarter)

Charges	157,000
Credits	13,000
Cost	144,000

III. Amount of material purchased (per quarter) $1,800,000

IV. Deficiency Index = Total purchases divided into the net cost of purchasing (Also equals the amount of cents a company spends to buy a dollars worth of goods)

$$= \frac{142,000}{1,800,000}$$

$$= .08 \text{ or } 8\%$$

V. Performance Index = 100 − 8

$$= 92\%$$

NOTE: All figures are fictitious and are listed for the purpose of explaining the technique.

the efficiency of a manufacturing operation. This is not so of the indirect departments. They present a difference because of the variety and non-repetitiveness of the work involved.

At McCulloch Motors Corporation, upon the establishment of a plan, the Receiving, Stores, and Shipping Sections would probably be tied in closely with the Production Department. The Production Buying and Inventory Control Sections might be calculated as shown in Table III.

The assumptions and calculations used here are not new, but their application is. The reason behind this method is sound and practical —it presents a correlation between the costs and savings for which the Production and Inventory Control Sections are responsible. It is an expression of the ultimate production purchasing cost in ratio to the value of direct materials purchased.

A performance index of 92% (as shown in Table III) would indicate that a considerable amount of buying is being done with a minimum of personnel. The index serves as a measuring stick by which the department can analyze its effectiveness.

From these calculations, it can be shown that the index will rise if the charges of such department expenses as inventories, losses, freight, and manpower are reduced. At the same time, it is a challenge to increase the credit side of the ledger by doing more efficient buying and engaging in a vigorous cost reduction program. This technique is capable of further refinement; it is presented to show the manner in which an indirect department's performance can be measured.

IV. Statistical Analyses and Inventory Control

The next item of importance is the application of industrial engineering methods in the control of material inventories. With the amount of money spent on production purchases, this is the area which is of greatest importance to us. There is need for a constant calculated and graphic analysis of the company's material inventories on hand and on order.

A chart of material accounts by category has been drawn up for use between the Accounting and Purchasing Departments. All purchases, issues, and withdrawals of materials are recorded by these account numbers. This enables us to analyze our inventories in more detail, instead of by complete products. A series of reports on material transactions are issued monthly by the Accounting Department. These include reports on inventory changes and credits, purchase price variations, dollar value of purchases, cost of sales, scrap, obsolete costs, etc. Analyses are made of these data on the past movement of materials. Important information is graphed to observe the trends, increases and decreases, minimums and maximums. A typical graph on inventory data is illustrated.

The most important report drawn up in the Purchasing Department is the analysis of the production purchase material inventory. The Accounting report lists, by code number and by dollar value:

1. The beginning inventory;
2. The charges for incoming purchased materials;
3. The credits for outgoing material in sales; and
4. The ending inventory.

From these figures, the Purchasing Department must analyze what took place in the past month and what, if any, action must be taken in the future. In one section of the report a new technique has been introduced to control the inventories. A monthly analysis table of materials on hand and on order has been designed to gauge the effectiveness of inventory control. This table compares the actual inventory, in terms of months-of-usage, to that of a standard or desired months-of-usage. The chart is broken down

into three parts: material on hand, material on order, and total material, for the various categories or products. The information on each item is set up thus:

A. Material on Hand Analysis.

Column 1—Actual material inventory on hand (dollars), excluding finished goods. Values taken from the Accounting report.

Column 2—Average usage per month (dollars), based on the past three months. This information taken from past cost of sales data.

Column 3—Material usage per month (dollars), based on the average of the next three months requirements. These values are calculated from the forecasted units on the manufacturing schedule.

Column 4—Actual months usage of materials in inventory. (Computed by dividing Column 1 by Column 3.)

Column 5—Standard usage months in inventory. This standard is established through experience and analysis of desired inventory levels. It may vary from 2 to 5 months, depending on the types, lead time, value, etc., of materials. This value is set by policy decision.

Column 6—Effectiveness ratio. This is a performance index associated with control of the inventories. It is derived by dividing the standard months usage (Column 5) by the actual months usage (Column 4). The desired rating is 1.00. Above 1.00 indicates too high an inventory, and below 1.00 indicates too low an inventory.

Column 7—Number of inventory turnovers in 12 months. This is computed by dividing 12 months by the number of months shown in Column 4. It should be in the range of 4 to 6 for the average light manufacturing firm.

B. Material on Order Analysis.

Column 8—Material on order (dollars). Calculated by the Inventory Analyst from the Kardex, by code number.

Column 9—Average months usage (dollars). Same as Column 3.

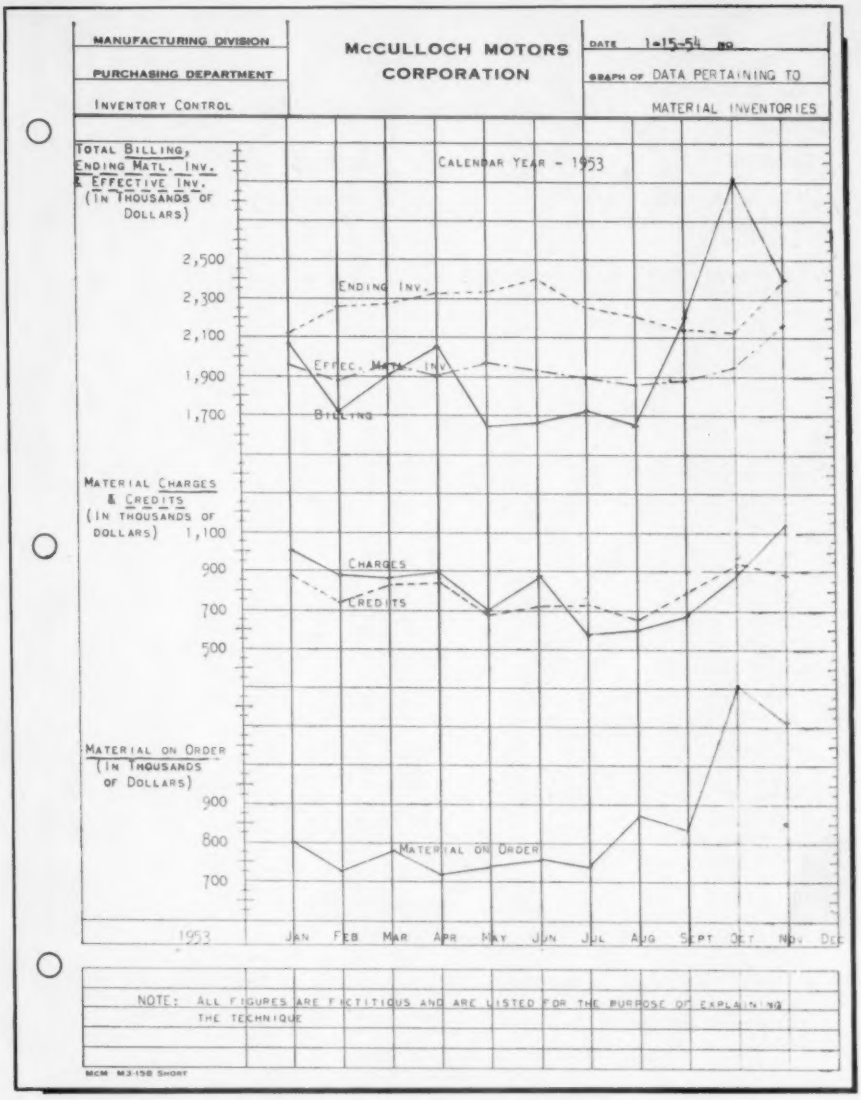
Column 10—Actual months of usage of material on order. This value is arrived at by dividing the material on order (Column 8) by average month's usage (Column 9).

Column 11—Standard months of usage on order. This value is set by past analysis and is a policy decision. It may vary from 1 to 3 months.

Column 12—Effectiveness ratio. This is computed by dividing the standard months usage on order (Column 11) by the actual months usage on order (Column 10).

C. Total Material Analysis.

Column 13—Total actual months of usage. This is the sum of Column 4 (on hand) and Column 10 (on order). It represents the total inventory available to meet the next three months forecasted requirements.



Graphic record of inventory performance.

Column 14—Total standard months usage. This is the sum of Column 5 (on hand) and Column 11 (on order). It represents the combined desired months usage of inventory on hand and on order. These values have been set by policy decisions.

Column 15—Total effectiveness ratio. This is derived by dividing Column 14 (standard) by Column 13 (actual). It is a relative measurement of the efficiency of control exercised by the Purchasing Department to meet the requirements of the production schedule.

An additional column is provided at the right for comment explaining the reasons for existing ratios and indicating future action.

This tabulation presents a full picture of the inventory position. It is a most useful tool for analysis and control, making it possible to locate those sections which are not in a favorable position and the degree to which corrective measures should be applied.

Another section of the inventory report is an analysis of the *variances of material cost* from that forecast in the budget. The Purchasing Department is responsible for the Materials Inventory Budget. Budget material charges are calculated in accordance with a manufacturing forecast; credits are prepared from the sales forecast. A master budget is prepared on an annual basis, and semi-annual or quarterly revisions are made, if required.

Calculation of purchasing budget variances becomes quite involved. Variances may be due to:

1. Variation in scheduled units.
2. Variation in unit cost.
3. Service sales variation.
4. Scrap variance.

The subtraction of these variances from the total variance shows that

		Material on Hand Analysis							Material on Order					Total Inv. Analysis			
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	
Pdt Code	Description	Actual Inv. Less Fin. Goods & Obsolete	Usage Avg. Mo. Based on Past 3 Mo	Usage Avg Mo. Based on 3 Mo Forecast	Actual Usage Mo. in Inv.	Std. Usage Mo. in Inv.	Effective-ness Ratio	Inv. Turnover in 12 Mos.	Matl. on Order	Usage Avg Month	Actual Usage Months on Order	Std. Usage Months for on Order	Effective-ness Ratio	Actual Total Mo. of Usage	Std. Total Mo. of Usage	Effective-ness Ratio	Remarks
10	Product A	$270,000	$ 90,000	$ 92,000	2.93	2.50	.85	4.09	$135,000	92,000	1.46	1.75	1.19	4.39	4.25	.97	Satisfactory
20	Product B		-	-	- -		- -	- -	- -	-	- -	- -	- -	- -	- -	- -	Product in Design
30	Product C	950,000	449,000	400,000	2.38	2.25	.95	5.04	510,000	400,000	1.27	1.50	1.18	3.65	3.75	1.02	Satisfactory
40	Product D	1,000,000	227,000	380,000	2.63	2.50	.95	4.56	520,000	380,000	1.37	1.25	.91	4.00	3.75	.94	Satisfactory
50	Product E	150,000	50,000	60,080	2.50	2.50	1.00	4.80	87,500	60,000	1.45	1.25	.81	3.95	3.75	.95	Satisfactory
60	Product F	42,000	12,000	21,000	2.00	2.25	1.12	6.00	31,500	21,000	1.50	1.25	.83	3.50	3.50	1.00	Light. Material ordered to increase
70	Product G	2,000	1,000	1,000	2.00	2.75	1.37	6.00	2,000	1,000	2.00	1.75	.85	4.00	4.50	1.12	Satisfactory
80	Product H	- -	- -	2,000	- -	4.00	- -	- -	4,000	2,000	2.00	2.00	.88	2.00	6.00	3.00	New Product. Just released to manufacture
90	Product I	600,000	180,000	267,000	2.25	3.00	1.33	5.33	321,000	267,000	1.20	1.50	1.25	3.45	4.50	1.30	Too Light. Making orders to increase
100	Product J	15,000	6,000	8,000	2.00	4.00	2.00	6.00	15,000	8,000	1.88	2.00	1.06	3.88	6.00	1.55	Too Light. Orders to increase
110	Product K	98,000	22,000	36,000	2.72	4.00	1.47	4.41	58,000	36,000	1.61	2.00	1.24	4.33	6.00	1.38	Too Light. Orders to increase
120	Product L	185,000	48,000	77,000	2.40	3.00	1.25	5.00	127,000	77,000	1.64	1.50	.91	4.04	4.50	1.11	Light. Under surveillance
	TOTAL	$3,312,000	$1,085,000	1344,000	2.47	2.60	1.05	4.52	$1,811,000	1,102,000	1.35	1.44	1.07	3.82	4.04	1.06	Satisfactory

(1) Total purchased material per Accounting Inventory Report less finished goods
(2) Past total of three months credits divided by 3.
(3) Forecast three months requirements divided by 3.
(4) (1) ÷ (3)
(5) Policy Derived Standard
(6) (5) ÷ (4)
(7) Divided 12 months by months in column (4)
(8) Total of Material on Order Report B-109
(9) Same as (2)
(10) (8) ÷ (9)
(11) Policy decision established
(12) (11) ÷ (10)
(13) Sum of (4) and (10)
(14) Sum of (5) and (11)
(15) (14) ÷ (13)

Note: All figures are fictitious and are listed for the purpose of explaining the technique

-15-

Analysis of purchase production material, on hand and on order.

which is due to Purchasing Department performance, i.e., whether we bought too much or too little in relation to the material which was budgeted.

Calculation of the *economical lot size* is another method for maintaining the amount of investment in stores at a pre-determined amount. Several methods, tables, and formulas have been developed for making this computation. The problem would become very complex if all costs were considered. Actually, only four factors need to be considered to arrive at a figure accurate enough for practical purposes. These factors are:

1. Price discounts as the order quantity increases.
2. Cost of placing each order.
3. Cost of space used for storage.
4. Inventory carrying charges, exclusive of space charges.

The first two of these factors deal with preparation charges; the latter two are involved with carrying charges. The point at which these two costs equal each other is the economical ordering quantity. That is, if low inventories are maintained, the preparation charges are high because of higher unit costs and the fact that more orders are written. In this case, too, a missed delivery or rejected lot can shut down the production line. However, if the reverse is true, and one order is placed for six months supply of goods, the carrying costs are high because material is subject to a space charge and ties up working capital. Further, material may deteriorate or become obsolete.

Material inventories at our plant are kept under constant surveillance. Overextended inventories, tying up working capital, have caused many companies financial embarrassment. We are endeavoring, through the use of these techniques for control, to maintain approximately a $2 million material inventory. This is equivalent to a 2½ months usage in relation to future production requirements. On a monthly basis, the amount of material coming in is balanced against the material going out in cost of sales. The amount of material on order amounts to about 50 days usage.

V. *Statistical Quality Control*

A fifth tool to be considered and applied is the science of statistical quality control. It is used jointly by the Purchasing and Receiving Inspection Departments, to assure that purchased materials and products are of the proper quality to meet manufacturing requirements. Purchasing is responsible for the procuring and receiving of material. It is up to the Inspection Department to judge as to its quality before routing the material into stores.

Material investigations are made into the sources of supply, type of vendor equipment, amount of past rejections, dimensions to be measured, class of part, etc. From these investigations and analyses, the Purchasing and Inspection Departments are able to determine the type of quality control charts that are required to random-accept different classes of materials.

VI. Cost and Performance Reports

The final technique to be mentioned here is the establishment of

a series of reports by and for the use of the Purchasing Department. These reports may be classified in two categories—informational and operational.

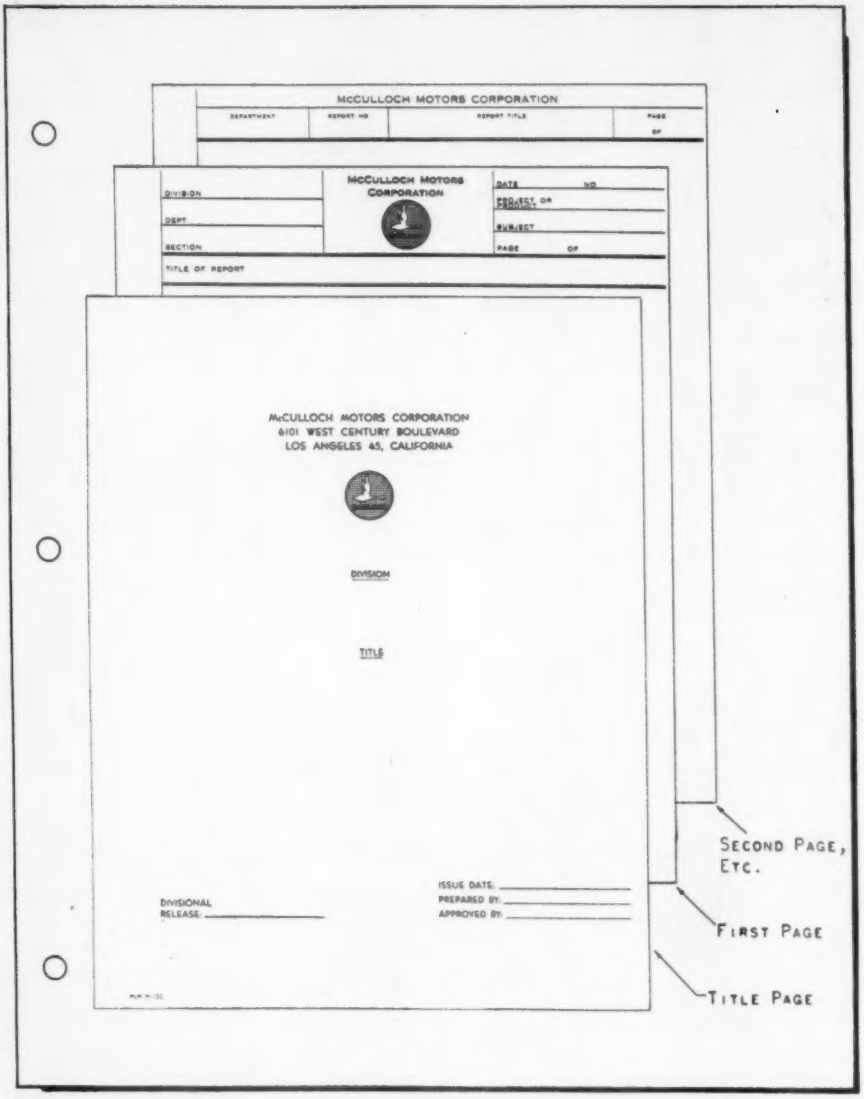
Informational reports are those that are initiated to pass along interesting and significant data to Purchasing and other department personnel. Material cost analyses of all kinds come under this heading. Such analyses are made by commodities, e.g., magnesium, aluminum, steel, castings, forgings, bearings, seals, machine parts, plastic and rubber parts, nuts, screws, springs, gaskets, etc. The trend of each of the purchasing categories is studied. Variations from standard are carefully analyzed and remedial action is recommended. The following report topics are representative of this category:

1. Dollar value and quantity of bearings used in 1953.
2. Material cost analysis, by commodities, for Model 33 saw.
3. Material price breaks for volume production of 1952 Ford supercharger kit.
4. Break-even point of magnesium and aluminum die cast metal costs.

Operational reports are important because, in most cases, they directly affect the department operation and efficiency. All of the department figures on inventories, costs, manpower, purchases, etc., are shown in these reports. A wealth of information is at your fingertips. These reports, when properly prepared and analyzed, are the strings that are pulled in developing most of the important decisions for running the department. In our particular type of operation the following reports come under this classification:

1. Budget reconciliation.
2. Material on order.
3. Analysis of the material inventories.
4. Dollar volume of purchases.
5. Purchase price variations.
6. Obsolescence costs.
7. Shipping, receiving, and shortage logs.
8. Material status (blade, chain, magnesium, aluminum, bearings, forgings).
9. Work measurement of operation in Buying, Inventory Control, Receiving, Stores, and Shipping Sections.

All of these reports are placed on a standardized report form, with headings denoting division, department, and section issuing the report; report number and date; and subject title. When we put into effect this series of reports, we had the means for effectively analyzing and controlling the Purchasing Department operations, with a minimum of confusion and errors.



Standard form for reports includes a title page, first page, and continuation sheets as needed.

Conclusion

This discussion has been based on the ways in which we at McCulloch Motors have applied the techniques of industrial engineering to our purchasing. These techniques are applicable to any purchasing operation, and can be helpful in solving other companies' problems as well.

There are many jobs open in Purchasing for industrial engineers. These classifications include such positions as Director of Material, Purchasing Agents, Buyers, Inventory Analysts, Material Analysts, Procedure Analysts, Statisticians, Material Follow-Up, Material Forecasting, and the like.

Purchasing and material problems play a very important part in today's manufacturing operations. Purchasing's decisions commit the company financially and affect its costs to a major degree. More and more, therefore, Purchasing is being accepted as an executive and managerial function. Many companies have made Purchasing Agents out of some of their Industrial Engineers. Their background of plant manufacturing methods and operations enables them better to understand and cope with material problems. Their techniques can be used to great advantage in the procuring of materials. Thus a new horizon has been opened to the industrial engineer, in the application of industrial engineering techniques in the field of industrial purchasing.

A simple form that performs a useful service

Data Procurement Simplified

By Richard E. Shafer Senior Engineer, New Products Dept., Packard-Bell Company, Pasadena, California

TECHNICAL data have become one of the most important factors in company operations today. Trade and business publications perform a very useful function in making such data available, and are cooperative in promoting maximum use of this service. However, there are certain common internal problems that can be coordinated to good advantage with systematic attention within the company itself.

Frequently the same information or catalogs are required from the same vendors or sources, by various individuals or departments within a company. As a result, circulated magazines are apt to be held overlong at certain desks, or pages or coupons removed, having the effect of denying this informaiton to others in the organization. Or several duplicate requests may be sent out, resulting in uncoordinated files and sometimes followed up by a multiplicity of sales calls on the same item.

To reduce the mail load within the company and consolidate the number of requests for data or for salesmen's calls from the same company, the form illustrated herewith has proved effective. It has also speeded the circulation of routed magazines and decreased their mutilation.

The usual routing slip is attached to the front cover of magazines to be circulated. The request form is attached to the inside of the back page so that it is folded inside when the magazine is being routed.

Magazines to be circulated are customarily given a high priority to make certain that data requests are handled promptly. Rarely is it necessary to deviate from this procedure, but arrangements are sufficiently flexible to permit modifications when required.

Please give high priority to all circulated data.

If your request is a duplicate, only repeat line number after your name.

Magazine Title _____ Issue _____

Line No. This Sheet	Your Name	Date	Page No.	Descrip. or Item No.	Data You Require (1) Catalogue & Prices (2) Re-Print (3) Booklet (4) Salesman	File		Remarks
						Dept.	Your	
1								
2								
3								
4								
etc.								

This form, attached to magazines routed through the organization, has substantially improved the acquisition of technical data and getting it to the individuals who can put it to use.

When magazines have completed their routing, the form is detached and given to a clerk who first checks the files for immediate availability of requested data and complies with the requests by obtaining the needed data and following one or more of the following procedures:

1. Attaches a routing slip to requested data when received, so that all interested individuals may see the information as soon as possible.
2. Dispatches desired copies of data for the personal files of the requestors.
3. Forwards copy of the data to the central or departmental library files.
4. Arranges to have visits by salesmen coordinated to permit interviews by those concerned.

The usual weekly library announcement list includes a notice of new technical data received, as well as other publications received during the week.

An over-all improvement in getting information to the right people in the organization has resulted.

A new way to cut cost on castings

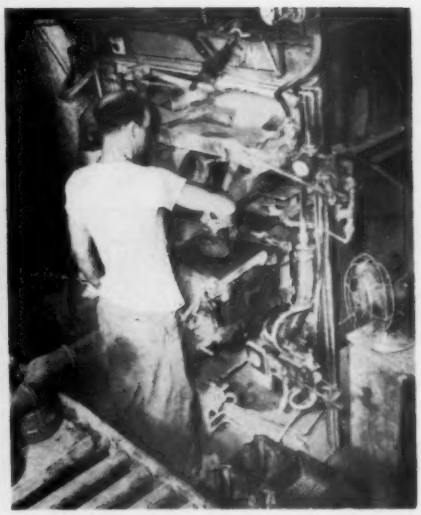
SHELL MOLDING

By John L. Schmieder, Jr.

Research Engineer
Oberdorfer Foundries
Syracuse, N.Y.



1. The inner surfaces of both corebox halves are sprayed with a coating of silicone emulsion parting agent, so that the finished shell mold core can be cleanly and easily stripped from the corebox.



2. Four cast iron chills, preheated to 550° F in an adjacent gas oven, are inserted in the cavity to form the dome of the combustion chamber. They are grooved to vent gases and to save some of the mix.



3. A measured quantity of free-flowing fine silica sand, blended with 6% phenol-formaldehyde resin, fills the pattern cavity. At the same time, supplementary sand is blown around exhaust and intake ports.

THOSE who have the responsibility of purchasing castings for manufacturers of metal products are finding the new process of shell molding advantageous, especially in the non-ferrous metals and alloys. Parts cast by this method often reduce machining time greatly, and can sometimes be used as cast, with no machining at all. They usually can be purchased from the foundry at a cost equal to, and sometimes lower than ordinary sand castings.

Although the first inklings of the shell molding method reached this country only eight years ago, it is already regarded as one of the most revolutionary advancements in the memory of foundry experts. The first practical use of the process is credited to Johannes Croning of Hamburg, Germany, whose plant used it in the mass production of ordnance during World War II—notably in molding cores for hand grenades, at the rate of 6,000 per day. One of the most closely guarded secrets of the German government, the process was reported at the end of the war by a U. S. technical team. Oberdorfer Foundries immediately turned available data over to their research laboratories for experimental production and further development.

A Precision Process

The shell mold method may be considered a precision casting process midway between sand casting and the lost wax technique. Insulating qualities of shell molds approach those of plaster molds. Parts suitable for shell molding are usually those containing a low volume of metal, i.e., parts which are light in weight for their over-all size as contrasted to more massive parts. However, the process is being used successfully to cast such chunky items as crank shafts, counter weights, fly wheels, and jet engine axial diffusers. In some instances it has been found to be the only fully satisfactory answer to a casting problem.

While shell molding is already being used for the production of a wide variety of parts in both ferrous and non-ferrous metals, it should not be looked upon as a universal mold making method nor as a cure-all for foundry problems. However,

its many unique advantages justify its consideration for numerous applications. Its outstanding attributes are the superior quality of the castings obtained over those from sand molds, its lower cost in comparison to precision casting methods, the high speed at which molds can be made, and the appreciable saving in quantity of molding material used per unit.

Briefly, the new process employs a thermosetting resin as a bond for the sand, without using temper water or other bonding aids. A heated metal pattern on a rollover dump box is the logical basic device for the jobbing foundry. Automatic, mechanized machinery has been designed for mass production of shell molds, but this probably is suitable only for specialized in-plant mold making, where huge runs of identical parts are required. A half or whole pattern is mounted in a dump box. The pattern is sprayed with a mold release agent, and the resin-sand mixture introduced against the pattern. The heat of the pattern melts the resin to a depth of ¼ to ½-inch deep in the sand, causing it to bind the grains together and to flow smoothly and tightly around the outline of the pattern. The dump box is then inverted, allowing the loose sand in the center to fall out and be used again. The result is a thin, durable, crusty shell with a smooth glazed surface and sharp detail.

The virtually grainless, smooth surfaces of the mold and its snug adhesion to the contours and angular edges of the pattern produce a casting with a smooth surface finish and close dimensional tolerances approaching those of die-casting. Results are far superior to sand casting, which it may often equal in price when all costs are tallied. Many times it produces a finer casting than a permanent mold, and it is frequently lower in cost, especially in the higher melting alloys.

Cost Saving Factors

Because of the exceptional cleanliness, smoothness, and fidelity of detail, clean-up time is cut to a fraction. The cores collapse and break out readily with no sand adhering to the part. Sandblasting or other surface cleaning is unnecessary, and there is practically no finning. Because of these characteristics, and the fact that tolerances



4. A brief curing cycle melts the resin plastic, binding the sand to the desired depth (¼" is the minimum practical thickness). Uncured surplus sand is dumped from core and returned to the hopper for re-use.



5. A radiant electric heating element is held inside the core for a short time to cure the inner side of the resin sand. No later curing of the core in an oven is necessary. The entire cycle averages 40 cores per hour.

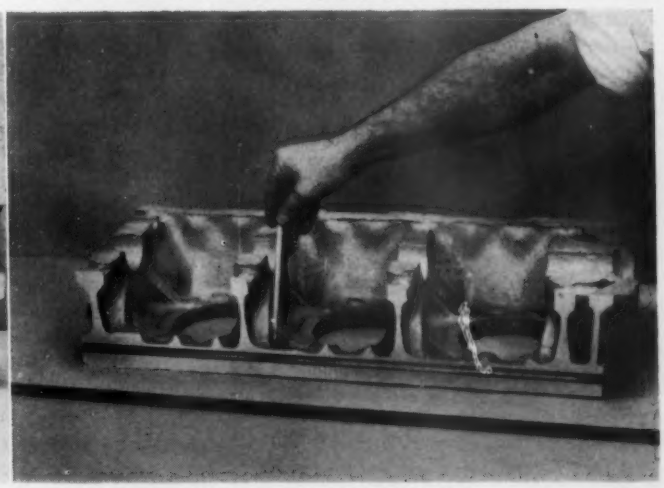


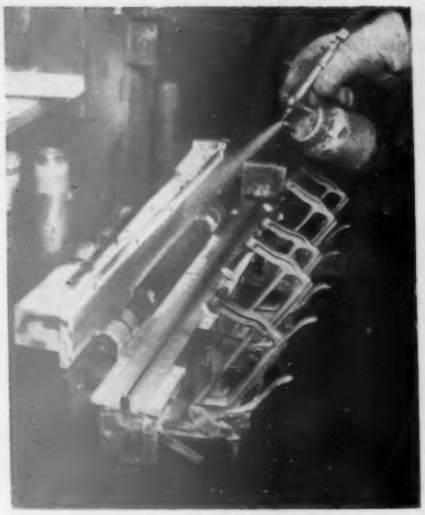
6. The finished hollow core separates cleanly when pattern box is opened. Each core contains 2 lbs., 10 oz. of sand mixture, as contrasted with a conventional core of similar design, weighing 7 lbs., 9 oz.

7. Cutaway half of cylinder head reveals clean interior walls of exhaust and intake channels, and well formed combustion chamber. Porous mold permits ready emission of gases during casting, prevents blows which might cause pitting. Castings are free from objectionable shrinkage or other internal defects.

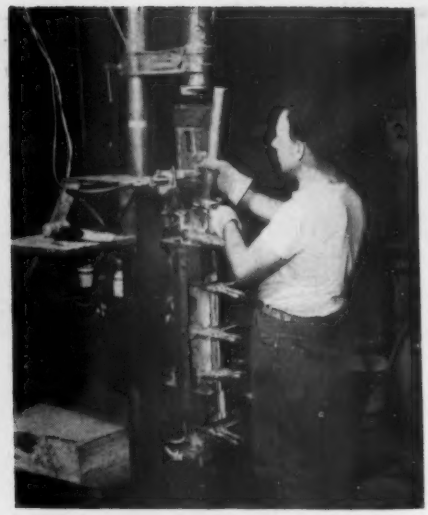


8. Cut-away section of engine block exposes horizontal oil line near base, generated by hollow shell molded core in foreground. Pencil indicates direction of tributary bleed lines which must be drilled through block into main oil line. The smooth, unpitted wall eliminates danger of drilling chips lodging on surface.





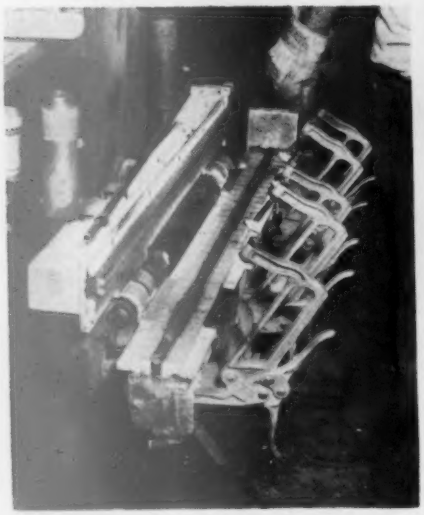
9. Concave half patterns for oil line core are sprayed with parting agent. Rod for forming vent hole is positioned in lower half.



10. Core box is clamped and rotated to upright position. Cartridge containing sand mix is placed between box opening and blower.



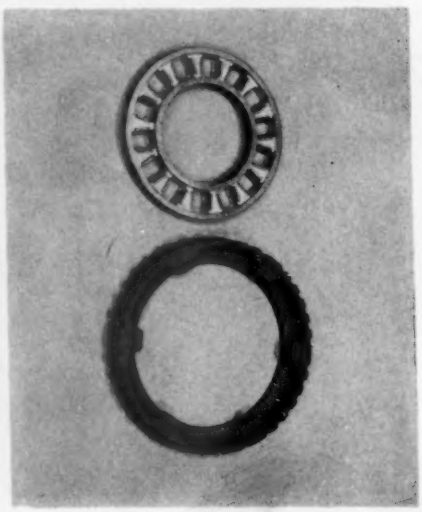
11. Sand mix is blown into the core box cavity under 120 pounds pressure to insure firm texture and complete contact with pattern.



12. Box is swung back to horizontal and opened. Vent rod is withdrawn and placed in tube on upper half to pre-heat between cycles.



13. Finished core is inspected by placing it in a simple fixture, lighted from beneath, and peering through the hollow center.



14. Unretouched photo of bronze parts to be "used as cast", showing clean edges and smooth surfaces obtained by shell molding method.

can be planned closely, great savings may be realized in machining to remove stock and in finishing operations. Many times the customer can use the parts as cast, as in the case of farm equipment parts. The surface may be perfect for a wrinkle finish or for other paints and coatings.

Shell molding cuts costs in other ways. The saving on the sand mix, particularly the resin, is obvious when compared to baked sand molds when, for example, a 10 lb. shell mold replaces a 50 lb. baked sand mold. Because the process is simple, requiring little experience or foundry knowledge, it permits the use of less skilled, lower grade labor.

Further savings result from the frequent improvement in metal yield and from the high unit rate of mold production. The plastic binder gives the mold greater stability and resistance to moisture absorption or deterioration, with the result that molds are less frequently damaged in handling or transit, and can be stored for indefinite periods if desired. The mold is already baked when it is removed from the pattern box, and consequently is not subject to damage as is a soft sand mold before it reaches the oven.

Typical Examples

The accompanying series of photographs illustrates the process by following it through on a couple of typical jobs. The machinery for making the molds was designed and rigged by Oberdorfer. An aluminum core box was used on initial runs, but this is being replaced with a cast iron box in anticipation of longer runs, because the latter will last longer and develop less carbon build-up. An iron platen with cast-in heating elements heats the entire box and patterns, maintaining a temperature of 570° F. An air cylinder actuates the closing and opening of the box. Supplementary feed pipes are swung into position against the sides of the box just long enough to deliver the sand to the core box cavity; while in position, they are sealed against the box by means of silicone rubber gaskets to prevent air leakage. The working area around the machine is enclosed by a booth with a suction pipe to draw off flying sand, dust, fumes, and heat.

The first example (photos 1 through 6) is the core mold for an

air-cooled engine cylinder head to be cast in aluminum. The core forms the internal combustion chamber and two ducts for intake and exhaust ports. Production averages 40 cores per hour. Each completed core contains 2 lbs., 10 oz. of sand mixture, about one-third the weight of a conventional core. The over-all foundry cost saving by the shell mold method on each cylinder head core is 6 cents.

The second example (photos 7 through 13) represents a casting problem that could be satisfactorily solved in no other way than by shell molding. An oil line had to be cast into the entire length of an aluminum six-cylinder crank case. Originally the oil line was provided for by casting a permanent steel tube in the crank case. Tributary feed lines were later drilled into the main line. When these pierced the tube, steel chips backed up into unavoidable blow pits between the sleeve and the aluminum block itself. Vibration later jarred the chips back into the line, ruining the cylinder walls and piston rings.

This problem was solved by eliminating the steel tube entirely, and casting the oil line in the aluminum block itself by means of a long, slender shell molded core which could be cleanly knocked out to leave the necessary smooth walls in the line. In spite of their close texture, the porosity of shell mold cores permits easy escape of gases, with consequent elimination of blows.

Generally speaking, shell molding is an economical and highly satisfactory technique for a number of casting applications in aluminum alloys, tin and gun metal bronze, gray and ductile irons, capable of producing excellent surface finishes with tolerances of .005″ to .010″ per inch. Because shell mold patterns must be heated, it is necessary to calculate expansion and allow for it in the pattern.

The process requires a complete departmental set-up of its own. Because foundry help must learn new ways from start to finish, it is generally desirable to employ people without previous foundry experience for production jobs. Shell molded parts cannot be thrown

(*Please turn to page* 282)

Partitions . . . Barriers to Morale

By Dwight G. Baird

MINOR changes in working conditions may have major effects on the morale of employees.

For example, the purchase order typing group in the general purchasing department of Chrysler Corporation at Detroit formerly were separated from others in the department by a partition. They were members of the Purchasing Department and they were in the Purchasing Department, but they didn't feel that they were a part of it because of that partition.

"We were losing personnel," Joseph Pfeiffer, Director of Purchases, said. "The girls in the purchase order typing group were always trying to get out of it, and if they couldn't get out any other way, some of them quit. Some would ask to be assigned to buyers, for example.

"When we investigated the situation, we learned that these girls felt that they were the lowest of the low; that they didn't amount to much because they were shut up in a room by themselves.

"When we learned how they felt about their location, we had that partition taken down. The girls remained in the same location and the only other change was that of spacing their desks a little further apart. But morale improved immediately and our personnel turnover was reduced to a minimum.

"Now most of the girls like their work and all of them, so far as we know, like their location and their working conditions. Just recently we had openings for three girls to work with buyers. Much to our surprise, we learned that the girls whose seniority entitled them to these positions didn't want them. We finally assigned two of the younger girls to the positions and had to hire another from the outside."

Order Typing Section—Part of the Department?



An Acknowledgment Does Not Mean that the Order Is Accepted

By *Albert Woodruff Gray*

> *The mere acknowledgment of an order is no more than a courteous promise to give it consideration.*
>
> —SUPREME COURT OF ALABAMA

A PRINTED FORM forwarded by an Illinois manufacturer upon receipt of each of a series of orders from a purchaser, had at the top the typed name and address of the purchaser. This was followed by the purchaser's order number, the order number of this manufacturer, the cash discount terms and the description of the items.

On each of these forms was, endorsed in red ink, "This is an exact copy of your order as entered on our books. If not correct please notify us at once," and at the bottom, "This is not an invoice. Acknowledgment of order only."

After repeated delays in shipments this manufacturer wrote, "As we have repeatedly told you we are going to make every attempt to deliver your orders. We expect to ship another car for you in February and more cars after that as rapidly as we are able. We cannot do the impossible nor can we at any time guarantee delivery. All we can do is go along to the best of our ability which we are doing."

Ultimately the purchaser sued for breach of contract by the seller for its failure to deliver according to these orders and recovered a judgment against the manufacturer in the Federal District Court for $16,105.67. The manufacturer appealed to the United States Court of Appeals and the judgment was reversed by that court.

"We consider it a close question," said the court, "whether the manufacturer's acknowledgment of the purchaser's order constituted an acceptance. Plainly printed on each acknowledgment was, 'Acknowledgment of order only'. The use of the word 'only' cannot be ignored. Every acknowledgment of the receipt of an order is not in law an acceptance thereof. It is not enough that the words of a reply justify a probable inference of assent."

Courtesy or Commitment?

In a famous decision by the Supreme Court of Alabama in which was involved this feature of the purchasing law, the comment was made that the mere acknowledgment of an order is "no more than a courteous promise to give it consideration."

The order in this case, given by the purchaser to a salesman of the manufacturer, set out in detail the kind, size, and quantity of the articles desired and the terms of payment. A few days later the purchaser received from the manufacturer a postcard acknowledging receipt of the order and that, "The same shall have prompt attention."

Later suit was brought by this purchaser against the manufacturer for breach of contract in failing to ship the goods specified in the order. When the case came before the Alabama Supreme Court it was held that since the order had not been accepted by the manufacturer there was no purchase contract and consequently, the purchaser had no ground for a recovery of his damages from the manufacturer.

"To constitute a valid contract of sale," said that court, "the assent of the parties must be mutual. The mere proposal by one man obviously constitutes no bargain in itself. It must be accompanied by the assent of another and the acceptance must be unconditional.

"The response *and the only response* the manufacturer made was an acknowledgment by postal card of the receipt of the order or proposal accompanied by the expression, 'The same shall have prompt attention.' Unless these words, 'The same shall have prompt attention' are deflected from their natural ordinary meaning they cannot be construed into an acceptance of the proposal of the purchaser, converting the two into a concluded or completed contract.

"The operative words are 'attention' and 'prompt.' The promise to give the proposal attention was not a promise of acceptance. It was not an assent to it. It was no more than a courteous promise to give it consideration and this, we do not doubt, is the sense in which it is generally, if not universally employed in transactions of this character.

"The purchaser was negotiating for the purchase of the goods and

stated the terms upon which he was willing to purchase. But there was no legal duty resting upon the manufacturer to enter into negotiations. Considering that the parties were standing in these relations it would contravene the intention of the manufacturer, drawing it into legal relations it did not intend to assume, if these words were rendered contractual and not as indicated, that the proposal of the purchaser would receive consideration —that it would not pass unheeded."

Works Both Ways

The promise of the seller to fill the orders it receives is not only vital to the creation of a purchase contract but has been repeatedly emphasized by the courts in sustaining the right of the purchaser to countermand his order at any time before a binding acceptance by the seller.

The acknowledgment by a manufacturer of an order for a cash register, specifying the model, price, terms of payment, was:

"This is to acknowledge receipt of your order dated June 23rd for one of our No. 542 cash registers. We thank you for your order and assure you that it will have our best attention."

A week later the purchaser wrote cancelling this order — "Inasmuch as this register has not been shipped as yet we are cancelling our order for the same."

The manufacturer replied that the order had been accepted and could not be countermanded, and two months later shipped the register. When the purchaser refused to accept it the manufacturer sued on what it claimed to be a purchase contract.

The court said in its decision of the case, "What does it mean when the seller says, 'We thank you for your order and assure you it will have our best attention'? The promise on the part of the seller that the purchaser's offer 'will have our best attention' seems to mean nothing more than that the seller will think about it—will consider it. It certainly does not mean that the seller has thought about it, has considered it and agrees to accept, abide by and comply with the terms of the offer. It is quite plain that there was no contract between the parties."

Offer Can Be Rescinded

This right of a purchaser to countermand an order at any time before acceptance by the seller was even more clearly defined in an action before a North Dakota court. A written order for grain cleaning machinery, dated August 10th, was given by the purchaser to a salesman for the manufacturer. Five months later the purchaser wrote the manufacturer, "Please cancel our order of August 10th." The manufacturer refused,—"We have investigated this order and find that the order is a signed order without any provision or condition under which you could cancel the same. Under the circumstances we cannot consent to its cancellation."

Shortly afterwards the machine was shipped. The purchaser refused to accept delivery and it was ultimately sold for freight and storage charges.

In the suit by the manufacturer for the price of this machine the purchaser contended that the order had been merely a proposal for the purchase of this machinery and had been withdrawn by him before it had been accepted by the manufacturer.

"The manufacturer was in no way obligated to accept such order," said the court, "and until it did so in fact and notified the purchaser thereof the latter was at liberty to countermand the same. Such machinery was not delivered to the common carrier for shipment until after the purchaser's letter had been received by the seller, countermanding the order. That the purchaser had the right to cancel or countermand such order at any time prior to its acceptance by the seller is abundantly supported by authority."

Both Parties Must Be Bound

Frequently attempts are made in purchase contracts to provide against cancellation by the customer, regardless of the seller's failure to accept the proposal of the purchaser to buy. Such methods by which a seller attempts to bind a purchaser while he himself remains free of obligation has brought down the ancient condemnation, "With what measure ye mete, it shall be measured to you again."

A purchase order of this character before a New York Court provided, "It is expressly agreed that this order shall not be countermanded." In the action by the seller to recover the purchase price irrespective of the cancellation of the order by the buyer before acceptance, the court said:

"The seller was not bound to accept the order or deliver the machine. The order consequently constitutes merely an offer and could not ripen into a contract until it had been accepted either by the actual delivery of the machine or by some other unequivocal act through which the seller on its part would bind itself to deliver the machine and thus furnish consideration for the buyer's promise to pay for the machine.

(*Please turn to page* 290)

REFERENCES

Lipman v. Arlington Seating Co., 192 Fed. 2d 93

Manier v. Appling, 20 So. 978, Alabama

National Cash Register Co. v. McCann, 140 N.Y.S. 916, New York

J. L. Owens Co. v. Bemis, 133 N.W. 59, North Dakota

Calcasieu Paper Co. v. Memphis Paper Co., 222 S.W.2d 617 Tennessee

Reliance Bagging Co. v. Electric Gin Co., 187 S.W.2d 724, Arkansas

Some Interesting



American Steel and Wire Division

United States Steel Company, Cleveland, Ohio

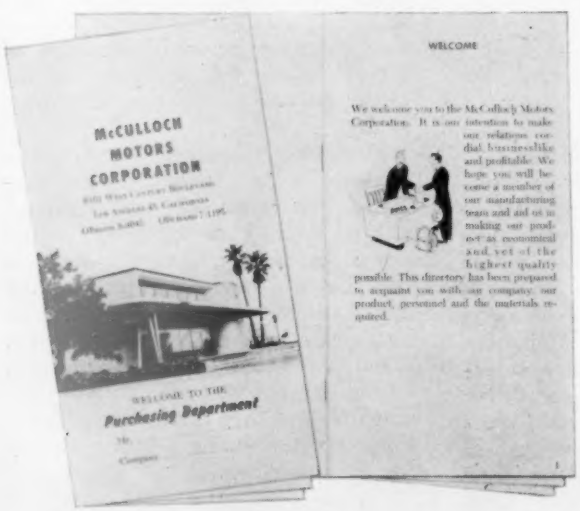
Handsome photographic illustrations in full color feature this welcome booklet. In addition to listing the special products manufactured in this Division, it serves an institutional purpose by listing the location and chief purchasing officer of each of the 19 Divisions and associated companies of United States Steel Company. Other informational literature is offered the caller, on request. A cordial message of welcome from the Purchasing Department appears on the first page, and the N.A.P.A. "Standards of Purchasing Practice" are included.

Tinnerman Products, Inc.

Cleveland, Ohio

This exceptionally interesting 12-page booklet, 9 x 6", has a minimum of text, but tells a very complete story by means of pictures and diagrams. Three-color printing makes for attractive and distinctive presentation. A unique feature is a series of sketches showing critical events of world history from 1870 to the present, paralleled by successive stages in the development of the Tinnerman organization from a modest hardware and stove store to the present $2 million plant producing speed fasteners to serve modern industrial needs. The "Who to See" directory is on a separate sheet inserted in the booklet.





McCulloch Motors Corp.

Los Angeles, Cal.

This 12-page welcome booklet is personalized by having the receptionist insert the caller's name and company connection at the time of call. It includes a Purchasing Department Directory, showing names of senior buyers, with listing of commodity classifications for which each is responsible. A helpful page is devoted to a statement of purchasing policy, including procedure for arranging interviews with plant and technical personnel, through Purchasing. Vendors are urged to provide catalogs and a list of their manufacturing equipment and facilities for McCulloch's vendor file.

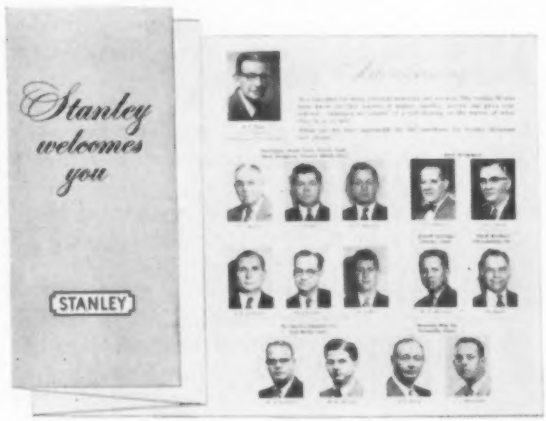
Welcome Booklets

Aluminum Company of America

Pittsburgh, Pa.

Alcoa welcomes callers to its fine new purchasing offices with this attractively informal and friendly booklet. The welcome message, on the first inside page, is personalized by inserting not only the name of the caller, but also the name of the receptionist on duty, thereby establishing a cordial person-to-person contact. The N.A.P.A. "Principles and Standards of Purchasing Practice" appear on the inside back cover.





The Stanley Works

New Britain, Conn.

Accordion fold makes an interesting folder and affords exceptional opportunity for display layout. Unusual feature is the pictorial portrait presentation of key purchasing personnel in major product and manufacturing divisions. Similar treatment is accorded, on another fold, to divisional sales managers. Pocket size folder opens up to a sheet 16 x 23″. Inside spread is devoted to highway and street maps of the New Britain area, and representative display of selected Stanley products.

Remington Arms Company

Bridgeport, Conn.

This folder manages to inject an unusual degree of readability and general interest into its four pages. The hunting sketch in the cover design, suggestive of the company's products, is in itself an invitation to turn to the inside pages. Besides listing a score of Remington "firsts" in the field of small arms and ammunition, mention is made of some other, unusual products manufactured by the company in the earlier periods of its 138-year history—including the first velocipedes, typewriters, and burglar alarms, machines for the mass production of matches, shoe button fasteners, cotton gins, rain guns for Swiss grape growers, and a baseball throwing gun.



Unique form design saves work, improves system

Combination Inquiry-Order Form Does Two Jobs at One Typing

By George E. Toles

FOR a considerable time, the purchasing department of The Buckeye Steel Castings Company, Columbus, Ohio, wrestled with the problem of how to get quotation requests and purchase orders prepared more quickly and more economically. It is a problem that faces many purchasing departments. At Buckeye, it has been solved by adopting a completely new combination inquiry-order system, using a single 12-part set of the combination forms, by which three inquiries and a pre-typed set of the purchase order are prepared at one typing.

The company previously had used the conventional system, with separate forms for quotation requests and for purchase orders. The inquiry forms were single sheets, which were manually interleaved with carbon to make duplicate sets, on which the vendors' names were subsequently inserted. After the bids were received and the vendor was chosen, a 5-part purchase order was typed.

For a normal purchase, two complete typings of the same information and lists of material were necessary—one for the inquiry sets and one for the purchase order. The system worked, but it involved a serious amount of duplication and lacked the elements of positive control.

In order to modernize their forms system to keep pace with the growth of the company and its requirements, Purchasing Agent W. L. Betz and Buyer Frank E. Smith made a thorough analysis of the old system and exactly what they wanted to accomplish. With the assistance of a forms specialist from a vendor company, they developed the new combination form which answered their specific needs.

The new system makes use of a 12-part Moore Speediset inquiry and purchase order, taking full advantage of such modern form design techniques as strip coated carbon, top and bottom stub construction, and varying lengths of sheets, to provide all of the necessary copies, with the necessary variations on different parts, at one writing.

The twelve parts making up the combination form are:

6-part Purchase Order Section

1. Original purchase order for vendor.
2. Purchasing Department copy for invoice audit and follow-up.
3. Accounting copy.
4. Stores copy for inventory.
5. Receiving report to notify Purchasing of receipts.
6. Purchasing Department file copy listing bidders.

6-part Inquiry Section

7. First vendor inquiry.
8. Duplicate of (7).
9. Second vendor inquiry.
10. Duplicate of (9).
11. Third vendor inquiry.
12. Duplicate of (11).

The first five copies measure 8½ x 14 inches. The bottom section, where terms and conditions appear on the vendor's original copy, has ruled spaces on the other copies to be used for working records. Copies 7 to 12 measure 8½ x 11. The space where vendor's name is to appear on the purchase order contains a statement of the terms of the quotation—delivery charges, returnable containers, discounts, etc. Strip carbon is used on the last six copies, so that only one vendor's name appears on each.

The form is initiated by the receipt of a purchase requisition in the Purchasing Department. It is prepared by typing in the names and addresses of three qualified vendors, inquiry date, reply deadline date, purpose, requisitioning department, item code, quantity desired, and description of articles. Buckeye uses letters (A,B,C, etc.) instead of numbers for the item code in order not to confuse the item with the quantity.

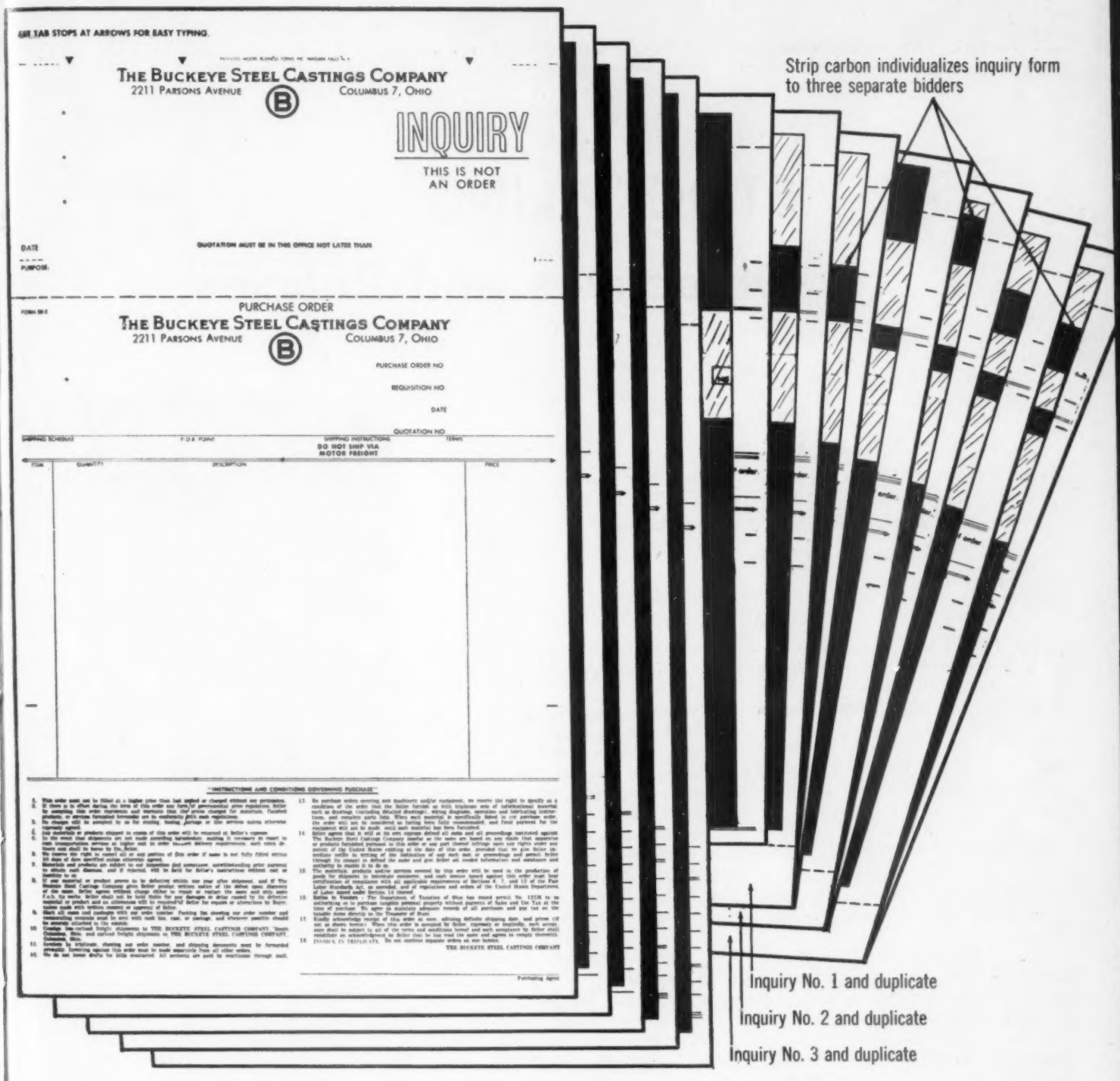
The form is then separated between parts 6 and 7. The entire first section (purchase order set) is placed in a date follow-up file for the day on which the quotations are to be returned. The last six parts (inquiry section) are divided into three separate 2-part forms, each showing only one vendor's name and address.

The form contains three folding marks to properly align each of the three vendor names in position for mailing in window envelopes. Each vendor who submits a bid fills in the price, delivery terms, and other data, and returns the first copy to Buckeye, keeping the second copy for his own reference.

As bids are received, they are filed with the purchase order section in the date file. On the deadline date, or when the last of the three bids is received, the forms are removed from the date file, and the desired vendor is selected.

The pending purchase order section is then completed by simply typing in the name of the successful vendor, purchase order number, date, quotation number, shipping schedule, etc. The form is then snapped apart, the upper (inquiry) section is detached and discarded, and the parts are distributed as indicated by the marginal words: 1. Vendor; 2. Purchasing; 3. Accounting; 4. Stores; 5. Receiving; 6. File.

Other papers relating to the transaction (quotation forms, follow-up correspondence, invoice copy, and receiving report) are filed with the



Purchasing copy to complete the purchasing file.

For cases where only one vendor is available, but a quotation or delivery information is desired in advance of placing the order, an 8-part set is used, including only one 2-part inquiry set. There is also a 5-part set, consisting of the purchase order section only, that is used as a standard purchase order when advance inquiry is not required.

The advantages of using this combination form instead of separate purchase orders and inquiry forms are many. Among the more important of them are:

1. It is time saving. The repetitive typing of information is eliminated by getting all three inquiries and the pre-typed purchase order in one operation.

2. It encourages better performance. A definite procedure of operation is established. Advance inquiries are sent on more orders because it is now easier to do so.

3. It provides better control. More information is more readily available on a single form, and a more complete control over purchase is established.

This has been made possible by means of the special type of form construction. Among the significant advantages provided are:

1. Carbon handling is eliminated.

2. Strip coated carbons permit variations of the information on different parts of the form, as indicated, while retaining complete information on the working copies.

3. The bottom stubs in the inquiry set permit easy removal of these parts for subsequent separation and distribution, without disturbing the alignment of the purchase order section.

Here are the questions you'd like to ask about . . .

STOCKPILING
Objectives and Policies

An interview with **A. J. Walsh,**
Commissioner, Emergency Procurement Service,
General Services Administration,
by A. N. Wecksler, Washington Editor



WE all feel that a Government stockpile of strategic raw materials makes sense, Mr. Walsh. How large should such a stockpile be?

The stockpile should be large enough to make up the estimated deficits between supplies of the strategic and critical materials, and total needs—both military and civilian—during an all-out war.

Is the stockpile rotated? Is some of it released in times of shortage?

Perishable materials in the stockpile, such as rubber, oils, and cordage fibers are rotated as required to prevent deterioration. Materials may be released pursuant to directives of the President when required for the common defense and in time of war or national emergency. Materials are not released to provide for any shortages in any other period.

Are materials bought for the stockpile for the secondary purpose of supporting production or prices in this country?

Materials are purchased to meet the stockpile objectives. However, purchases to meet the new long-term objectives, recently announced by the Administration, are to be made at such times as purchases will help to reactivate productive capacity and in other ways alleviate distressed conditions in domestic mining industries.

Purchasing agents are obviously interested in supply of materials for civilian as well as military needs. Do you feel that the stockpile might be liquidated at some future time?

The Stockpile Act forbids liquidation of the stockpile. I do not foresee any change in the attitude either of the Administration or of Congress with respect to this policy.

In terms of purchase price, and in comparison to current market prices, have the prices paid for stockpile materials been high?

No. Despite the decline in market prices for many strategic and critical materials, the present value of all the materials in the stockpile exceeds their cost.

In terms of dollars, how much material destined for the stockpile has been purchased already? How much is yet to be bought?

Materials in the stockpile inventory or under contract for future delivery to the stockpile have a value of approximately $5,318.1 million, on the basis of March 31, 1954, prices. The total program would be valued at $6,716.5 on this basis, so that approximately $1,398.4 million worth of materials remain to be purchased. Accordingly, approximately 79% of the total has already been provided for, and only 21% remains to be bought. These figures, however, do not reflect the new long-term objectives.

In terms of normal rates of usage, how many years of normal use does the stockpile represent?

That varies for the different materials, depending upon prospective supplies during an emergency period. As mentioned earlier, the targets have been set on the basis of estimated deficits, not total use.

What about emergency use? That is, how much of a safety factor would the stockpile be in case of a war emergency?

The stockpile is intended to provide for all military uses and for essential civilian uses during a war emergency.

Does the Government stockpiling program call for a constant schedule of buying, or do you just go

in when the market for a given material is at a predetermined price level?

The GSA purchases materials in accordance with purchase directives issued by the Office of Defense Mobilization. Every effort is made by GSA to meet such directives by regular purchase, with as little effect as possible upon the market.

Billions in stockpile materials must mean a huge warehousing and storage program. Can you tell us how this is done?

Warehousing and storage of the stockpiled materials is a man-sized job. Materials are stored at more than 300 locations throughout the country. The facilities range from vaults for the storage of precious metals and other valuable items to open air sites for the storage of bulk ores. As an indication of the scope of the program, it is estimated that more than 24 million square feet of closed warehouse space will be required to store the stockpiled materials.

The locations are determined in accordance with policies of the Office of Defense Mobilization, based on strategic guidance received from the Joint Chiefs of Staff. Materials are stored at points conveniently located for consumption. Many of the facilities are Government-owned, and operated by the Army, Navy, Air Force, or GSA. The storage locations are inspected regularly. Attention must be given to fire protection and security precautions.

Do some of our strategic stockpile materials come from behind the iron curtain?

No. Materials are not being purchased from iron curtain countries.

Is there some buying going on for the purpose of keeping potential enemies from acquiring strategic materials? Preclusive buying?

No. There are no preclusive buying arrangements in connection with the stockpile.

In buying stockpile materials, does GSA have an organization of specialist buyers who follow the commodity markets closely?

We follow the type of organization that is generally accepted in industrial purchasing. Purchases are made by men who specialize in a small group of related materials and who are in constant contact with the sellers of the commodities with which we are concerned.

A. J. Walsh has a background of successful experience in purchasing operations for basic industry—steel, aircraft, and utilities. He came to Washington during World War II as Assistant Director of Procurement, Treasury Department, in charge of the $6 billion Lend-Lease Program of providing industrial and civilian commodities to Allied nations. This assignment included program planning, purchasing, transportation and storage, and financial activities.

When GSA was created after the war, he was named Commissioner of a special Emergency Procurement Service within that agency, charged with building up the materials stockpile. In addition to direct procurement activities, he has been vitally concerned with the GSA programs of expanding domestic capacity for the production of aluminum, magnesium, titanium, and other metals.

What about fissionable materials? Are they a part of the strategic stockpile, or is that handled separately by the Atomic Energy Commission?

Fissionable materials are not included in the stockpile. The AEC is responsible for such materials.

In some materials, we understand the stockpile will have many years supply—as much as six or seven years. How can you justify such a large tonnage in frozen inventory?

All stockpile objectives are based on carefully estimated requirements, and the amounts in the stockpile can be justified on the basis of such needs.

When the level of our military forces has been built up, and a stockpile of modern weapons assembled, will the need for a stockpile be lessened?

Stockpile objectives are constantly subject to review. Under the conditions you have stated, the stockpile will still be needed, since it covers the requirements for new weapons, other military uses, and essential civilian needs during a war emergency.

Obviously, a national stockpile is an implement of war. Why, then, does GSA—a civilian agency—buy and maintain it, instead of the military, which buys other implements of war?

This is a legislative requirement. Further, as previously mentioned, the stockpile covers civilian as well as military requirements.

We know that in some materials, domestic and foreign prices are out of balance. In these situations, is the Buy American Act a help or a hindrance? What is GSA's general position regarding this Act?

As required by the Buy American Act, preference is given to domestic materials in purchasing for the stockpile. Many of the strategic and critical materials, of course, can be obtained only or primarily from foreign sources. Actually, with or without the Buy American Act, stockpile purchase policies would be substantially the same.

There is strong talk on Capitol Hill in favor of higher tariffs on certain metals subject to stockpiling. Presumably this would increase prices to the stockpile. Does GSA favor the imposition of these tariffs, or is it opposed to them?

Duties are not paid on materials imported for the stockpile, so that higher tariffs would not increase our prices.

To what extent does GSA participate in international allocations of scarce materials?

So far as I know, there are no existing arrangements for the international allocation of any of the stockpiled materials. The International Tin Agreement is not yet effective—and, as announced several months ago, the United States will not participate.

Handy Chart Shows Cost of Steel Rods

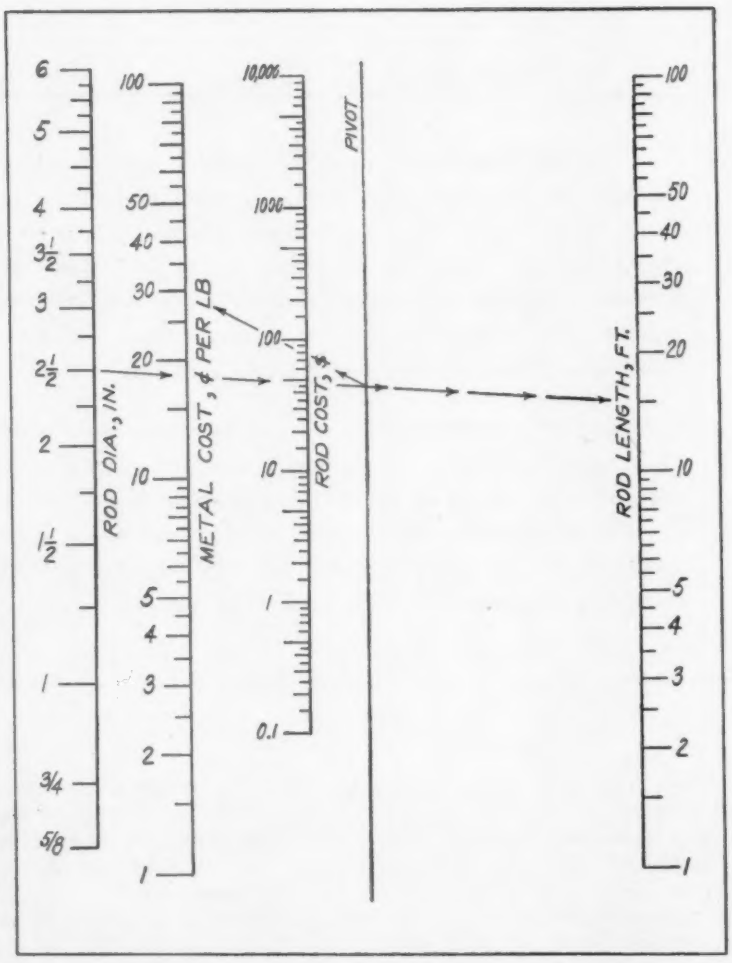
By Louis J. Murphy, M.E.

ONE of the most common items purchased for industrial use is the steel bar. It may be needed for such rough use as reinforcing concrete structures, or for precision work requiring the highest grade of steel available. Requirements are generally figured by the foot, but priced by the pound, so that a cost calculation is involved.

Since small diameter bars are generally sold in lots of a dozen or more, at stated prices, this chart has been set up for the larger diameters, of varying lengths and cost per pound. In this category there is a great variation in composition and other cost-influencing factors. However, no matter what type you purchase, you can easily find its cost from this chart. Here's how to use it.

Example: What is the cost of a steel rod 2½-in. in diameter and 15 ft. long, if finished steel cost is 30¢ per pound?

Solution: Enter the chart at the left, at the rod diameter of 2½ in., and draw a straight line from this point through the rod length of 15 ft. on the right hand scale. Then, from the intersection of this line with the pivot line, draw another straight line through the metal cost of 30¢ per pound. Where this line intersects the rod cost scale, read the cost directly, as $75.



You can use this chart for all usual grades of steel bars and shafts. If the steel price should be more than $1 per pound, move the decimal point one place to the left to bring it within the scale (e.g., if the actual price is $1.80 per pound, use a price of 18¢ and solve as detailed above.) Then move the decimal point one place to the left in the result. Once you know the cost per bar, simply multiply by the number of bars to be ordered.

The chart is set up for bar lengths up to 100 ft. Remember that you can often make worthwhile savings by ordering long bars and having them cut to required length before or after shipment.

The Pulse of Business

AUGUST, 1954

PURCHASING'S
Summary of economic conditions

Business recovery continues, latest statistics indicate. Production index remains steady at higher level reached in May. Inventory liquidation, major cause of downturn may be slowing down. For the first time since 1950, manufacturers' inventories are below their year ago level. New orders for non-durable goods are above May, 1953. Pickup in durable goods is less encouraging.

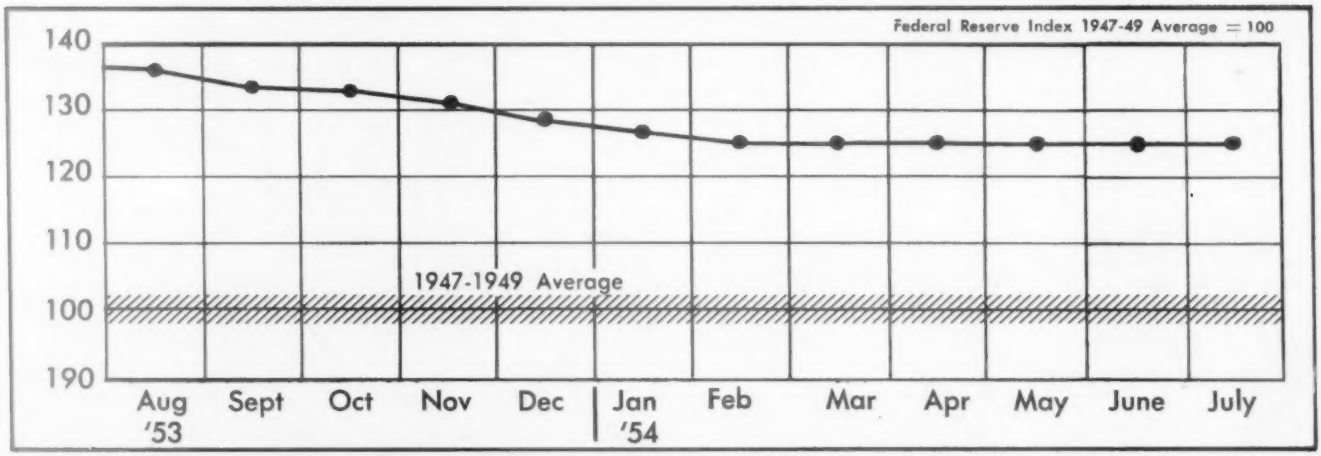
A brighter job outlook is reported by Secretary of Labor Mitchell. Contrary to expectations, June graduates were readily absorbed and employment rose by a million. Tipoff to a future rise in employment may be the increase in hours worked weekly that has occurred since January, according to Presidential Adviser Dr. Arthur F. Burns.

Rate of recovery is slowed by usual mid-summer doldrums. Unfortunately, production and sales statistics are a month or more behind the current market. Clues to the current situation are found in reduced carloadings and the drop in steel operating rate. According to industry spokesmen, the current steel production rate of 65% of capacity is not due to the recent price increase. Reduced consumption by fabricators during August and September is blamed. A big contributing factor: plant vacation shutdowns.

"Danger of a severe recession seems over", according to the leading economist, Sumner H. Slichter. Forces for recovery should be more greatly felt by fall or winter. Shrinking consumer debt (repayments exceeded borrowings by $1.4 billion through May 31) provides cushion of purchasing power. Public works expenditures by state and local governments increasing at rate of $1 billion annually. Enormous needs will force continued high spending. Increased competition requires industry to continue spending for modern, cost-cutting equipment.

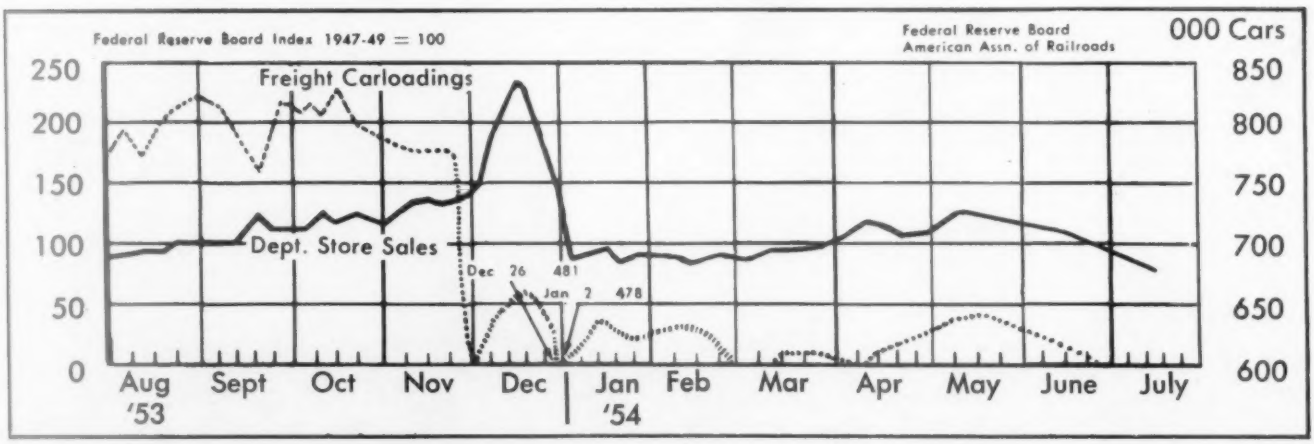
Do corporations and individuals have the money to spend? Latest figures show consumer income at annual rate of $285.2 billion - off but $1.1 billion from the year ago level. Allowing for tax reductions, net income is higher than a year ago. Investors are betting that 1954 will be a fat year for corporate profits as they push stocks to new highs.

PRODUCTION



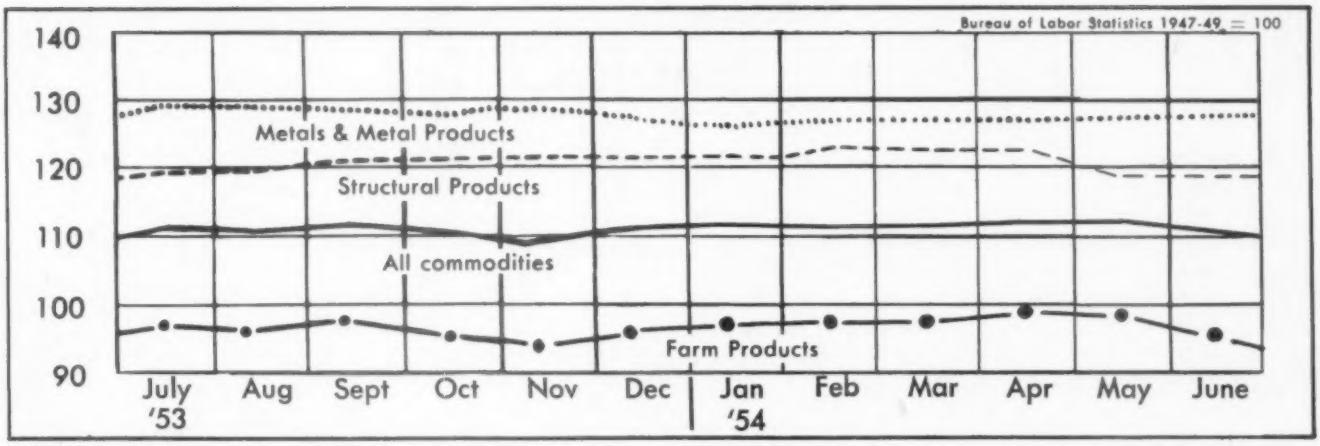
	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
Industrial Production Index	1947-49=100	124	124	136	0	— 8.7
Steel Production (Weekly)	000 net tons	1,559	1,746	2,134	—10.8	—27.0
Electric Power Production (Weekly)	mil KWH	8,185	8,246	8,096	— 0.7	+ 1.1
Bituminous Coal Production (Weekly)	000 net tons	1,420	7,175	1,629	—80.2	—12.8
Auto, Truck & Bus Output (Weekly)	units	125,210	135,655	163,999	— 7.7	—23.7
Petroleum Output (Daily Average)	000 bbls.	6,280	6,466	6,515	— 2.9	— 3.7

TRADE



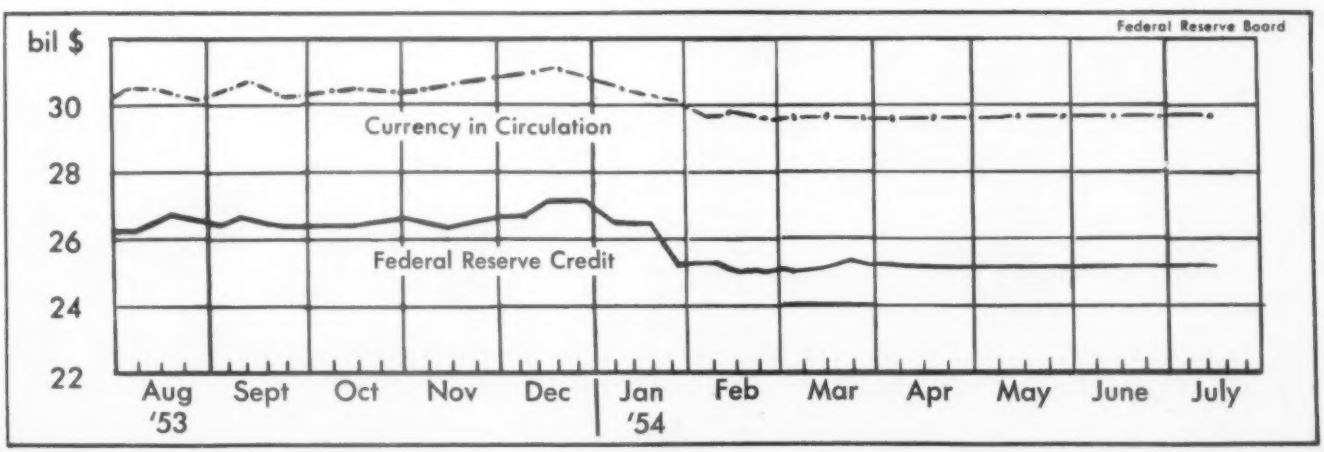
	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
Dept. Stores Sales Index (Fed. Res.)	1947-49=100	77	111	92	—31.6	—16.3
Commercial Failures (Dun & Bradstreet)	no.	196	218	139	—10.1	+41.0
Freight Carloadings	cars	569,562	612,315	721,454	— 7.0	—21.1
Miscellaneous Carloadings	cars	280,110	304,919	349,119	— 8.1	—19.8

PRICES



	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
All Commodities (BLS)	1947-49=100	110.0	110.9	109.5	— 0.8	+ 0.5
Farm Products	1947-49=100	94.8	97.9	95.4	— 3.2	— 0.6
Metals & Metal Products	1947-49=100	127.1	127.1	126.9	0	+ 0.2
Structural Products	1947-49=100	119.0	119.3	118.1	— 0.3	+ 0.8
Steel Billets (Pittsburgh)	net ton	$64.00	$62.00	$62.00	+ 3.2	+ 3.2
Steel Scrap, heavy melting, Pitts	net ton	29.00	29.00	48.00	0	—39.6
Copper, electrolytic	lb.	.30	.30	.30	0	0
Rubber (rib-smoked sheets)	lb.	.245/8	.235/8	.233/8	+ 4.2	+ 5.3

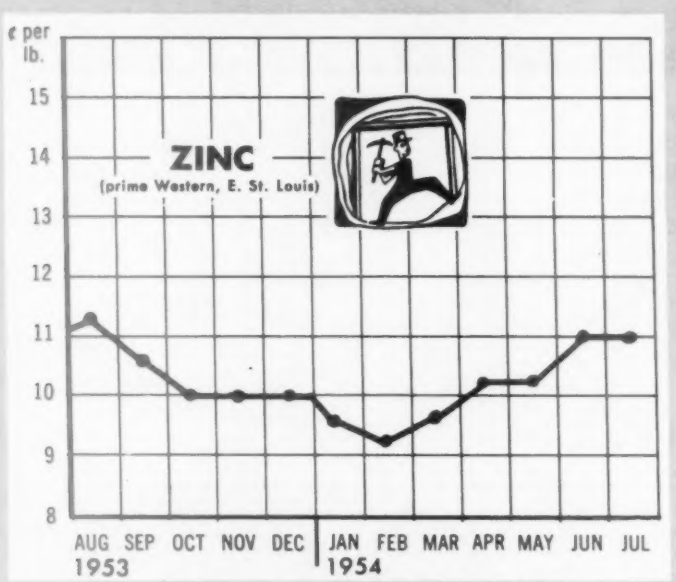
FINANCE

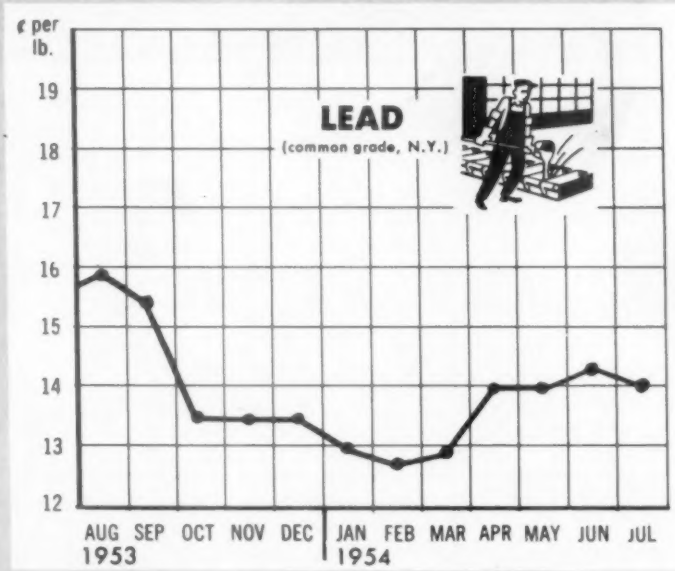


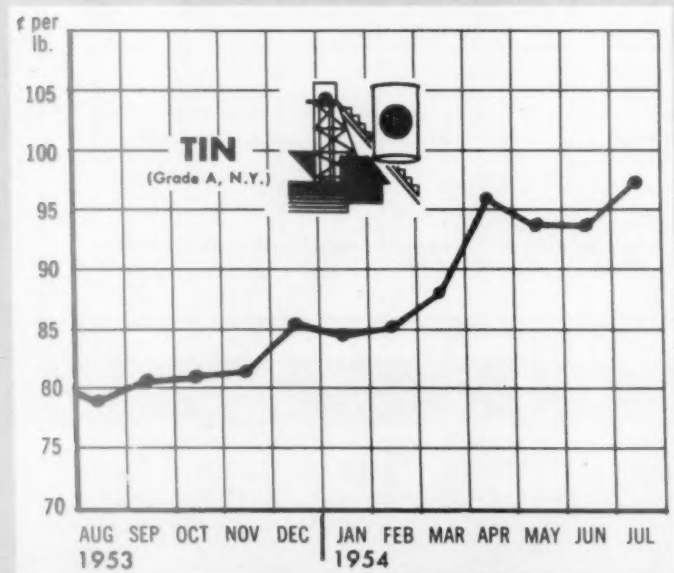
	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
Stock Prices (Standard & Poor's)	1926=100	239.8	230.0	191.8	+ 4.2	+25.0
Bank Clearings (New York)	mil $	11,335	9,127	8,227	+24.1	+37.8
Federal Reserve Credit	mil $	25,669	25,740	25,923	— 0.3	— 1.0
Currency in Circulation	mil $	29,981	29,873	30,163	+ 0.4	— 0.6

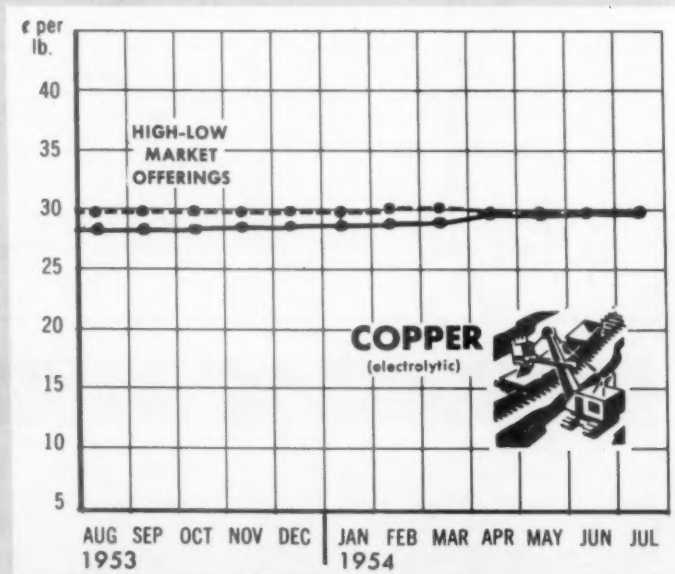
Non-Ferrous Prices Firm—Mixed Trend in Other Commodities

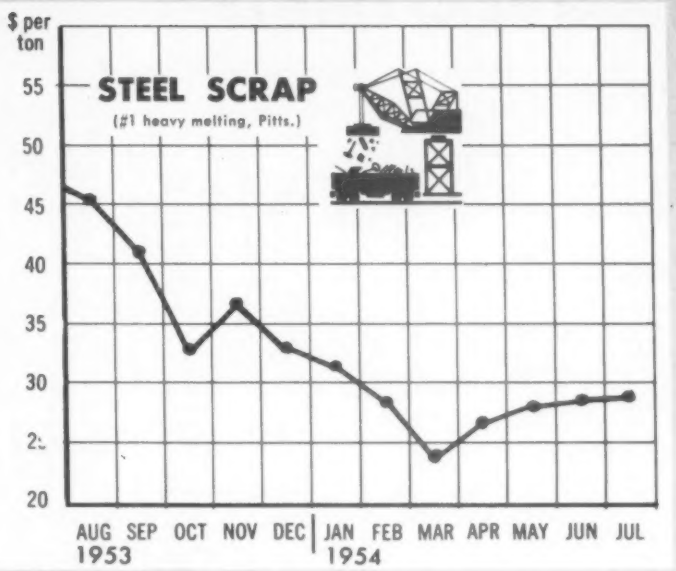
Futures markets in non-ferrous metals indicate confidence that stockpile buying will maintain prices near current levels. Fuel oil is being bought at a 10¢ discount from previous price levels. Heavy stocks are squeezing margins of refiners. Crude remains high at fixed prices under state "conservation" controls. Reacting to the recent 1¢ increase in synthetic rubber, crude rubber prices are up. Higher wool prices are predicted. Heavy buying by Russian and other European consumers is pushing up Australian prices. Mercury users are confused by government plan to buy 200,000 flasks of domestic and Mexican production in next three years. Current production of the two countries is but 30,000 flasks annually.

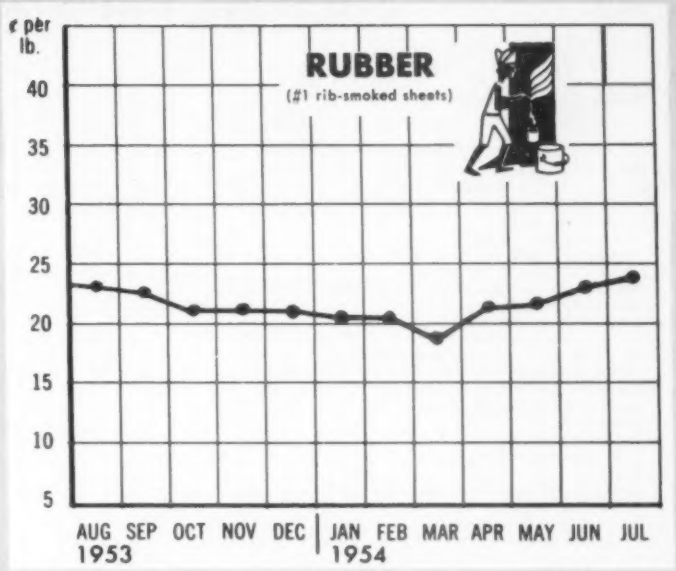


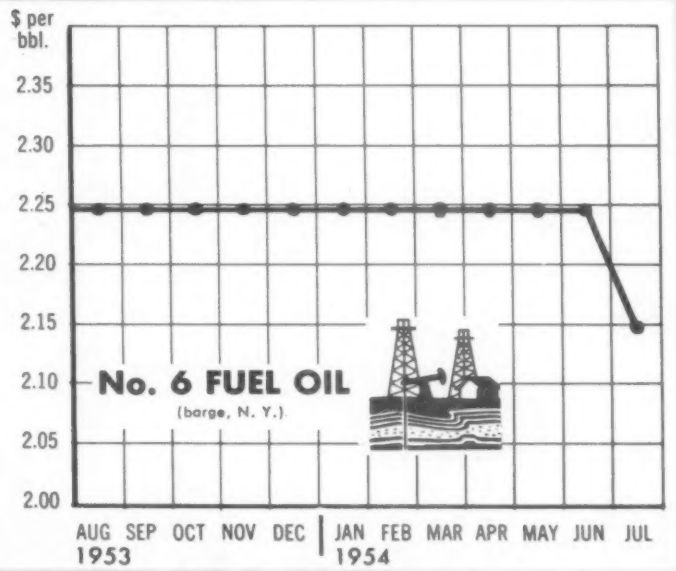


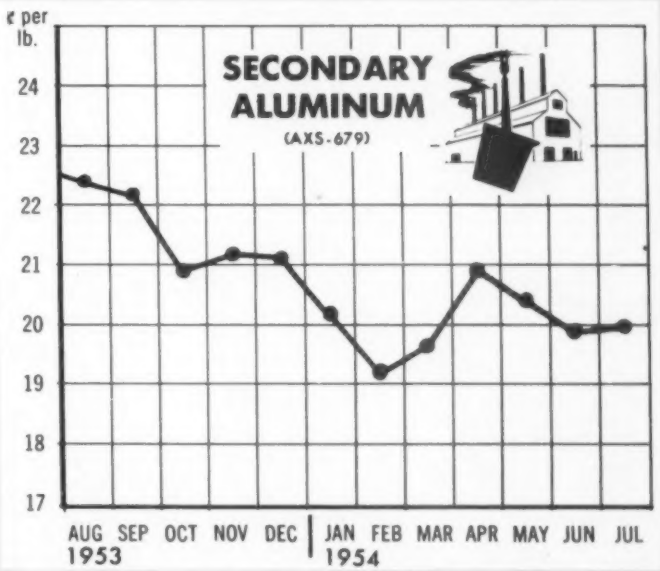


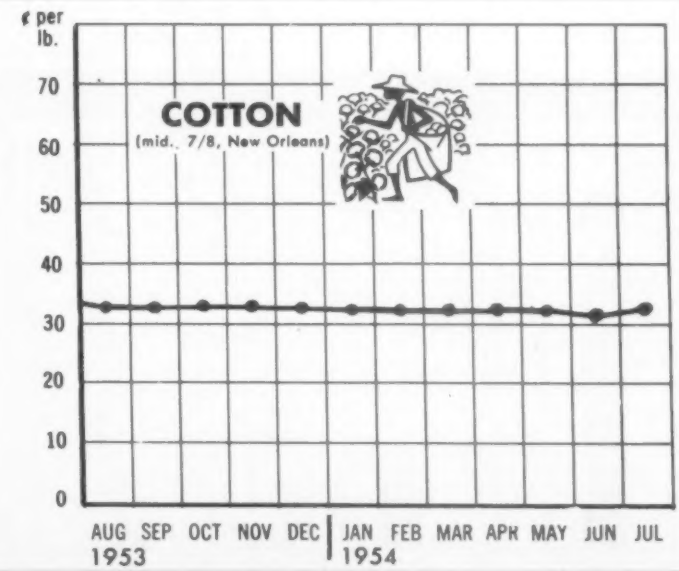


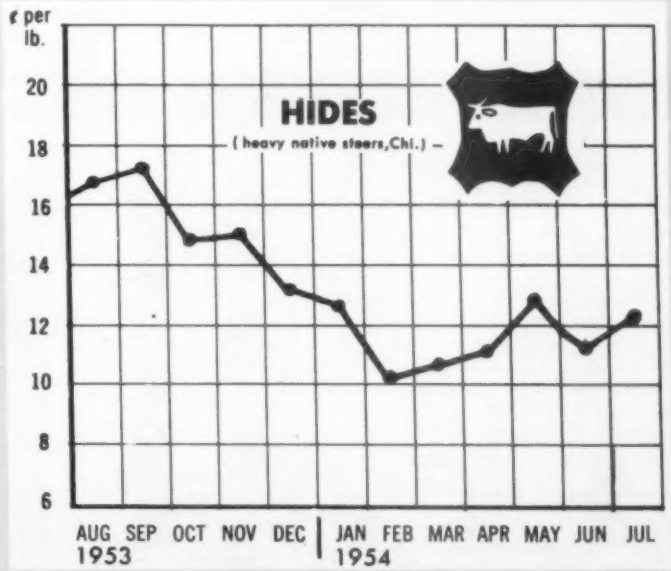

$ per ton
STEEL SCRAP
(#1 heavy melting, Pitts.)
55
50
45
40
35
30
20
AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL
1953
1954


¢ per lb.
RUBBER
(#1 rib-smoked sheets)
40
35
30
25
20
15
10
5
AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL
1953
1954


$ per bbl.
No. 6 FUEL OIL
(barge, N. Y.)
2.35
2.30
2.25
2.20
2.15
2.10
2.05
2.00
AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL
1953
1954


¢ per lb.
SECONDARY ALUMINUM
(AXS-679)
24
23
22
21
20
19
18
17
AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL
1953
1954

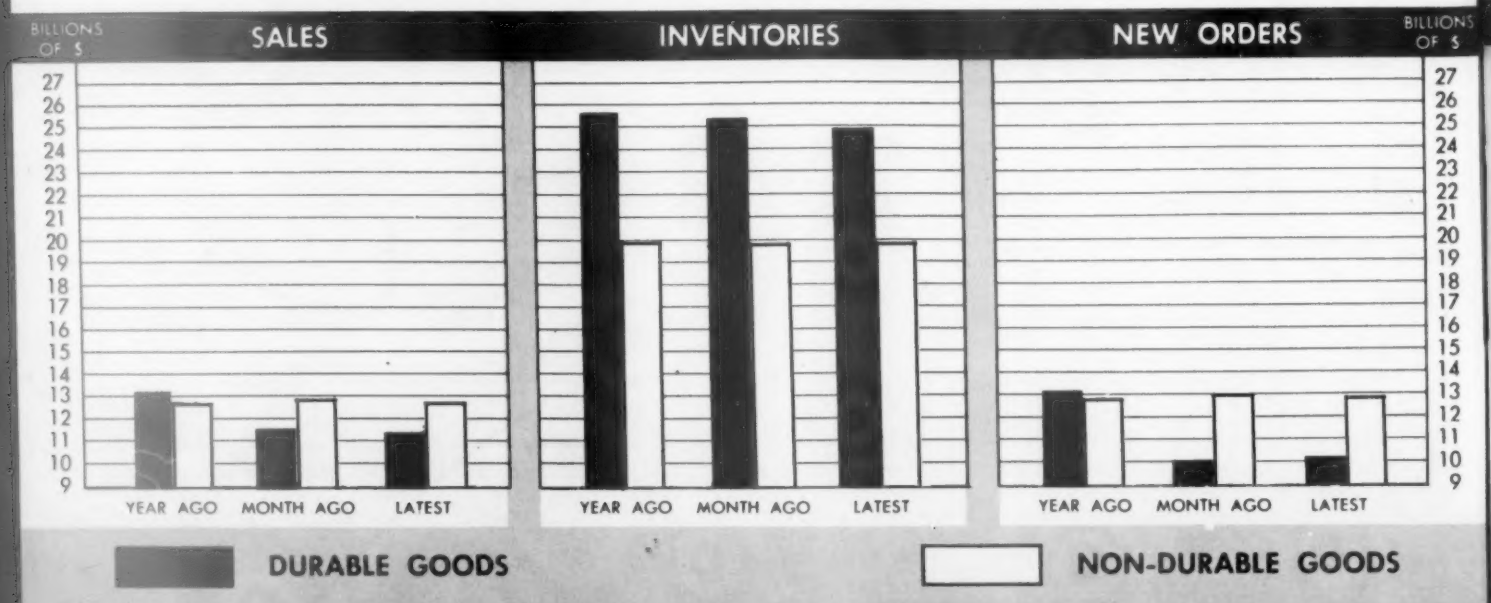

¢ per lb.
COTTON
(mid., 7/8, New Orleans)
70
60
50
40
30
20
10
0
AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL
1953
1954

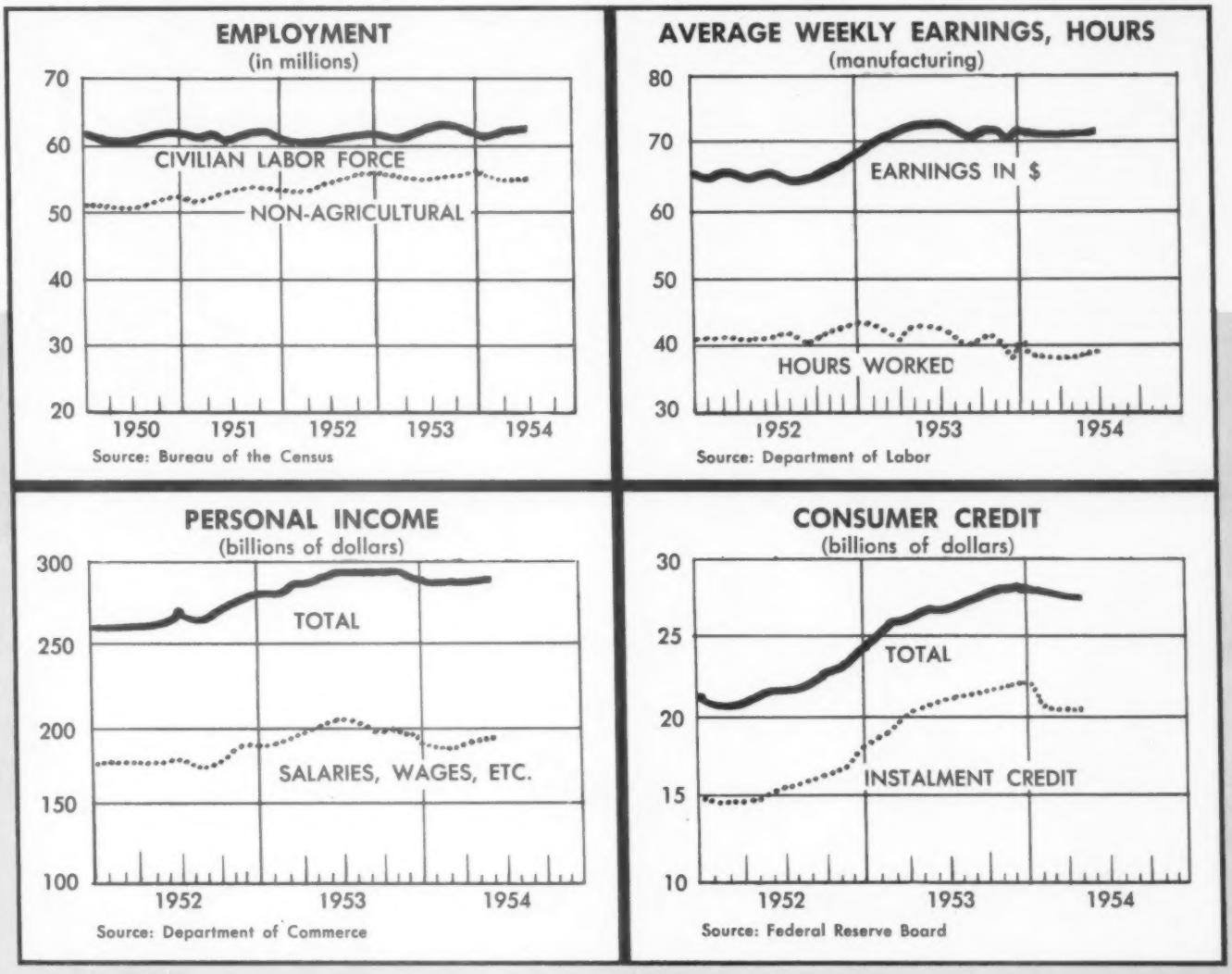

¢ per lb.
HIDES
(heavy native steers, Chi.)
20
18
16
14
12
10
8
6
AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN JUL
1953
1954

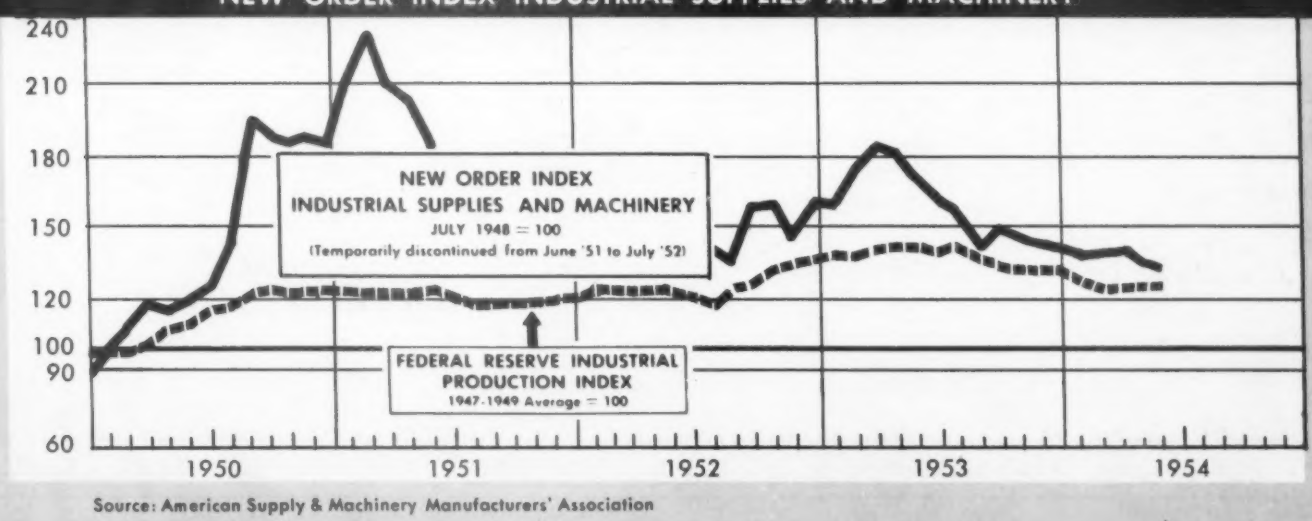
Sales, Inventories and New Orders

	1953	1954				
	May	Jan.	Feb.	Mar.	Apr. (r)	May (p)
Value of Manufacturers' Sales Seasonally Adjusted (Millions of Dollars)						
All Manufacturing Industries	25,816	23,902	23,620	24,064	24,418	24,099
Durable goods industries	13,148	11,580	11,278	11,385	11,502	11,371
Primary metals	2,211	1,609	1,580	1,528	1,575	1,514
Fabricated metals	1,257	1,176	1,132	1,173	1,223	1,154
Electrical machinery	1,437	1,328	1,269	1,355	1,305	1,324
Machinery (except electrical)	2,156	1,959	1,968	1,941	1,939	1,868
Motor vehicles & equipment	2,350	2,101	1,962	1,981	2,052	2,080
Transportation equipment (exc. motor vehicles)	998	1,005	942	931	971	960
Furniture and fixtures	369	325	309	317	300	317
Lumber products (exc. furniture)	772	659	659	688	693	649
Stone, clay and glass products	586	517	573	569	547	592
Professional, scientific instruments	404	364	348	353	356	355
Other industries, incl. ordnance	608	537	536	549	541	558
Nondurable goods industries	12,668	12,322	12,342	12,679	12,916	12,728
Food and kindred products	3,631	3,802	3,681	3,802	3,977	3,863
Beverages	565	626	648	628	677	679
Tobacco products	305	292	291	309	305	304
Textile-mill products	1,283	992	1,035	1,060	1,073	1,110
Apparel	943	857	825	806	866	829
Leather and products	256	259	274	290	278	301
Paper and allied products	724	680	676	730	733	723
Printing and publishing	819	748	832	776	750	793
Chemicals and allied products	1,672	1,569	1,590	1,692	1,720	1,680
Petroleum and coal products	2,048	2,149	2,139	2,198	2,162	2,071
Rubber products	422	348	351	388	375	n.a.
Book value of Manufacturers' Inventories Seasonally Adjusted (Millions of Dollars)						
All Manufacturing Industries	45,673	46,382	46,115	45,774	45,183	44,805
Durable goods industries	25,681	26,526	26,168	25,900	25,345	24,913
Primary metals	3,308	3,388	3,344	3,354	3,226	3,148
Fabricated metals	2,607	3,012	2,948	2,917	2,837	2,765
Electrical Machinery	3,266	3,342	3,326	3,248	3,167	3,085
Machinery (exc. electrical)	5,524	5,551	5,512	5,416	5,297	5,224
Motor vehicles & equipment	3,348	3,482	3,380	3,296	3,189	3,100
Transportation equipment (exc. motor vehicles)	2,651	2,784	2,732	2,753	2,690	2,621
Furniture and fixtures	660	661	666	665	665	661
Lumber products (exc. furniture)	1,041	1,022	1,015	1,025	1,010	1,028
Stone, clay and glass products	881	907	917	906	916	920
Professional, scientific instruments	857	895	883	874	883	890
Other industries, incl. ordnance	1,538	1,482	1,445	1,446	1,465	1,471
Nondurable goods industries	19,992	19,856	19,947	19,874	19,838	19,892
Food and kindred products	3,493	3,524	3,589	3,598	3,596	3,583
Beverages	1,212	1,162	1,161	1,196	1,188	1,176
Tobacco products	1,818	1,842	1,840	1,833	1,865	1,875
Textile-mill products	2,631	2,464	2,455	2,442	2,412	2,412
Apparel	1,890	1,872	1,863	1,791	1,762	1,782
Leather and products	578	581	573	573	580	593
Paper and allied products	1,060	1,034	1,048	1,050	1,047	1,052
Printing and publishing	745	769	762	767	777	771
Chemicals and allied products	3,007	3,067	3,080	3,072	3,061	3,061
Petroleum and coal products	2,670	2,697	2,719	2,703	2,738	2,775
Rubber products	888	844	857	849	812	n.a.
Manufacturers' New Orders (Adjusted)						
All Manufacturing Industries	25,883	20,749	22,016	22,859	23,017	23,053
Durable goods industries	13,101	8,475	9,629	10,206	10,021	10,144
Nondurable goods industries	12,782	12,274	12,387	12,653	12,996	12,909

p—preliminary r—revised n.a.—not available




EMPLOYMENT
(in millions)
70
60
50
40
30
20
CIVILIAN LABOR FORCE
NON-AGRICULTURAL
1950
1951
1952
1953
1954
Source: Bureau of the Census
AVERAGE WEEKLY EARNINGS, HOURS
(manufacturing)
80
70
60
50
40
30
EARNINGS IN $
HOURS WORKED
1952
1953
1954
Source: Department of Labor
PERSONAL INCOME
(billions of dollars)
300
250
200
150
100
TOTAL
SALARIES, WAGES, ETC.
1952
1953
1954
Source: Department of Commerce
CONSUMER CREDIT
(billions of dollars)
30
25
20
15
10
TOTAL
INSTALMENT CREDIT
1952
1953
1954
Source: Federal Reserve Board


NEW ORDER INDEX INDUSTRIAL SUPPLIES AND MACHINERY
240
210
180
150
120
100
90
60
NEW ORDER INDEX
INDUSTRIAL SUPPLIES AND MACHINERY
JULY 1948 = 100
(Temporarily discontinued from June '51 to July '52)
FEDERAL RESERVE INDUSTRIAL
PRODUCTION INDEX
1947-1949 Average = 100
1950
1951
1952
1953
1954
Source: American Supply & Machinery Manufacturers' Association

Straws in the Trade Wind

COST SQUEEZE ON STEEL FABRICATORS - Who is going to pay for the recent increase in steel prices? Previous price hikes were simply passed through to the ultimate consumer. It is a sure bet, with buying resistance being what it is, this one won't be. Manufacturers of finished products will either have to absorb higher costs themselves or persuade their suppliers to absorb them. Since pressure is on to reduce costs, hard-pressed buyers in the appliance and auto industries will fight to get suppliers of fabricated parts to absorb at least part of the increase.

STEELMAKERS OPTIMISTIC - Steel industry economists are confident that the recent $3 per ton increase can be passed on without reducing demand. It is pointed out that the increase would only amount to about $10 on a $2500 automobile. Caution prevails on stainless steel prices, however. To date, they have not been increased. Reason: fear of loss of markets to aluminum.

ALUMINUM NEXT? - The steelworkers union is demanding the same wage treatment from the aluminum industry that it received from the steel companies. Alcoa has stated that it can't afford higher wages without some price relief. Last time, higher wages meant a 1¢ per pound increase in the light metal. Some in industry believe wisest course is to recoup higher costs by expanding markets for metal. They fear increase would hurt sales too much.

CONSTRUCTION BOOM CONTINUES - Eugene Grace, president of Bethlehem Steel, predicts 1954 construction outlays will approach and possibly equal the 1953 record despite drop in federal spending. He estimates the construction backlog at about $75 billion over the next five years. Supporting his optimism is the fact that outlays for the first six months of this year hit a record $16.6 billion, 2% higher than 1953. In June, expenditures topped $3.3 billion, a new high for that month.

PIGGYBACK SERVICE - Four eastern railroads, the Pennsylvania, Erie, Lackawanna, and Nickel Plate, have started hauling freight by trailers-on-flatcars. Two others, the Wabash and B&O, also plan starting the service. With the "piggyback" method, truck-trailers are carried between major points on flatcars. Then, they are unloaded and picked up by truck tractors for movement to their final destination. Railroads feel they can offer better service than truckers with this plan and recoup business they have lost on intercity hauls.

Second Life for Industrial Gloves

By John W. Gibson

Director, Institute of Industrial Launderers
Washington, D.C.

FOR the fourth time that week, an employee of a Detroit manufacturer came to the stockroom counter, rang the bell, and asked for a new pair of work gloves. The stockroom clerk took his old pair, the ones he had received only a couple of days before, and issued him a new pair. The trade-ins, worn and dirty, were flipped into a refuse bin.

That bin, and others like it in which worn work gloves were discarded, later turned out to be a greater source of value than many handsome, complex pieces of machinery proudly pointed out by the manufacturer on plant tours. In fact, it turned out to be worth exactly $279,162 in one year's time to that manufacturer, once he discovered glove salvage, the service that is saving industry millions of dollars this year.

Today that same employee is issued gloves whenever he needs them, as before, but he is issued reconditioned gloves. He likes them. They are strong as new; they have the comfort of an old shoe and the cleanliness of a surgeon's scalpel. Needless to say, with today's emphasis on economy, the manufacturer likes them too. He is currently reclaiming 83.9% of his work gloves that were formerly discarded.

Purchasing men in any of the thousands of American plants which supply workers with gloves, the most common on-the-job item supplied by management, can put the experience of that firm and countless others to work for them. They too will find savings in the refuse bin that are impressive in any language.

In the past five years, the salvage of work gloves has mushroomed into one of the most popular services offered to industry by the men who "Coverall Industry"—the 140 members of the National Institute of Industrial Launderers.

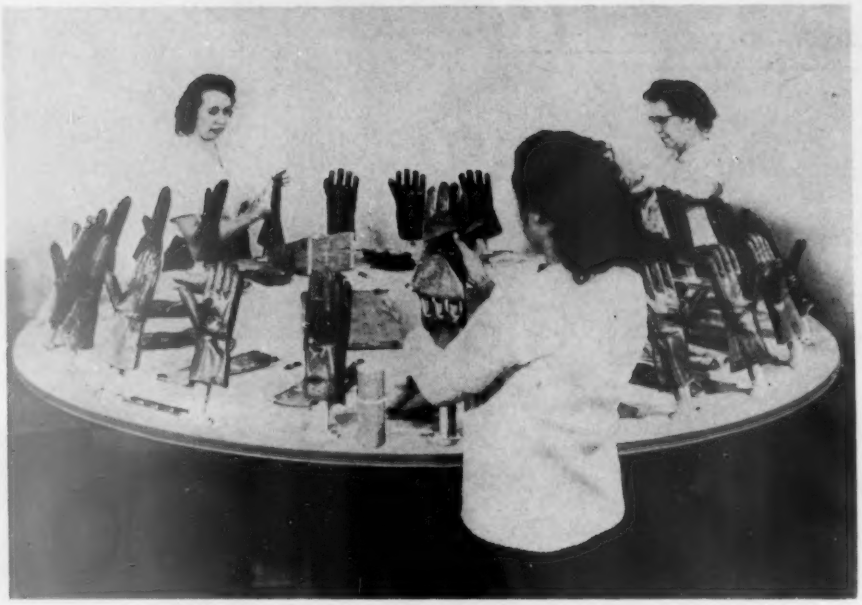
With the expansion of the salvage service, new techniques and methods were developed. Today, practically every type of work glove (assuming good quality in the original purchase) can be reconditioned. This includes canvas, terry cloth, hot mill, leather, (horsehide) chrome leather, and plastic gloves.

The story of glove salvage might properly begin with the U. S. Industrial Glove Corporation, of Detroit, the firm that pioneered the glove salvage field and developed a modern pattern that is now common throughout most of the country.

Gloves are first sorted, then cleaned. The cleaning and sterilization process is determined by the glove fabric. No one process is suitable to all types of gloves, and the industrial launderer has a special process for every type of material. For the safety director, whose primary concern is the safety of the worker, these cleaning processes are of special interest. After processing, the gloves emerge anti-

End of the Road? — or Second Life





Final stage — reconditioning after repair.

septically clean, and there is absolutely no danger of dermatitis or other industrial disease from reconditioned work gloves.

The Reclamation Process

Following the cleaning process, the gloves are tumbled and dried at extremely high temperatures. They are inspected to determine which ones need repairs and which do not. This segregation determines the amount of the charge which will be made. Usually from 30 to 35% of them need repairs, and less than 20% are beyond the point where they can be successfully reconditioned.

Patches are cemented to the glove fabric. Only suitable cloth and other materials compatible with the original fabric (e.g., leather on leather) are used. This assures the permanance of the reclamation job. The patch is often so perfectly mated to the original fabric that it is hardly noticeable, and so strong that it cannot be pried loose with a pair of pliers.

Following repair, the gloves are placed on aluminum, steam-heated finger forms which stretch them taut, erase all wrinkles, and restore the original shape.

Gloves are then matched and bundled in convenient packages of from five to ten pairs and returned to the customer. Throughout the process, each customer's gloves are kept in a single batch through all steps in the reconditioning process. In a week or ten days, these same gloves will be picked up again and reprocessed. There are instances on record, where gloves have been reconditioned up to eight or ten times.

One of the great advantages of the service is the fact that gloves are thoroughly and scientifically cleaned *regularly*. Frequent cleaning means both economy and safety. Excessive wear puts the gloves beyond the point where they can be successfully salvaged, and deprives the worker of adequate hand protection on the job.

Plastic gloves require special treatment. They are dipped in a vinyl solution that adds a second layer of wear and protection, and the new coating is fused and cured in special ovens.





Some typical "before and after" examples. Less than 20% of used gloves are beyond the point where they can be successfully salvaged for re-use.

Techniques for the reclamation of plastic gloves are more involved than those used with ordinary fabric gloves, but are equally successful and economical. They are redipped in a plastic bath, and return in a condition often better than new, with a better grip and traction due to the second coating of plastic.

Another advantage of glove salvage, that is seldom noted, is the psychological one. Workers who are inclined to be extravagant with new gloves are more thrifty with reclaimed ones because they realize that a value has been placed on them.

Service Factors

The questions most frequently asked by management about the glove salvage program include these three: How are gloves counted and charged for? How about pick-up and delivery? How wide-spread and available is the service?

It is not necessary to count gloves before shipping them, unless plant accounting policy requires such a count. Industrial launderers, with a large capital investment in plant and equipment, are reliable businessmen; 140 of the leaders in the field are certified, accredited members of the Institute. They are fully responsible for all customers' goods consigned to them for processing. They will extend every opportunity to double-check quantities, and will even return scrap for inspection and accounting if desired.

Plant managements needn't worry about inspecting or sorting which could dissipate the potential savings. The gloves are carefully inspected by the industrial launderer who, obviously, is desirous of reconditioning as many pairs as possible. His only revenue is derived from successfully salvaged gloves returned to the customer—not from scrapped gloves. Consequently there is no "package" price determined by the quantity he receives. The charge is determined by the quantity he returns, and no charge is made for scrap.

As to pick-up and delivery, it is regularly scheduled as frequently as individual requirements may dictate. It is available in virtually all industrial areas, and in most cases without extra charge. U. S. Industrial Glove Corporation, for example, covers practically one-fourth of the United States each week with its own trucks. Wherever a plant's location, a glove reconditioner can be found nearby, and efficient delivery service can be established.

Reports of Savings

Many plant executives have been outspoken in regard to this service. One of them is Bert S. Wohlgemuth, General Superintendent of Salvage and Reclamation for the Wheeling (W. Va.) Steel Corporation. He says: "Industrial concerns furnishing gloves gratis to their employees should not overlook the savings that can be made through salvaging their used gloves." He cites statistics to bear out his experience.

During the year 1953, his firm issued 15,010 gloves. Their cost amounted to $16,726.84; replacement value would amount to the same figure. But by reclaiming these gloves at a cost of $3,804.17, covering all handling, cleaning, and repair costs, he points out a saving of $12,922.67, the difference between the cost of reclaiming used gloves and replacing them with new ones.

He adds: "At our blast furnaces and steel mills we use an assortment of gloves such as all canvas, leather-palm gloves, all leather, and all leather steel studded. As we use them, gloves are subject to dirt, grease, abrasions, burns, cuts, and tears. In almost all cases no glove is too dirty to clean. All in all, we have found that about 65% of our used gloves are salvagable. We have found by indelible markings on the cuff that many pairs have been reconditioned up to four times."

An automotive plant in Detroit discovered that it could reclaim 92% of the worn and dirty plastic gloves which had been discarded before the salvage program was adopted. Steel mills, foundries, steel manufacturers, office machine producers, petroleum refineries, plating and metal finishing shops, maintenance crews at Rockefeller Center, the cosmetic industry, and a nationally known bakery chain are some of the many users of the salvage service. A small lock manufacturer in the midwest, employing 300 workers, reports a salvage ratio of 93%.

Highest Suggestion Award

A glove salvage story appearing in the *Ford Rouge News*, the house organ prepared for the employees of Ford Motor Company's Rouge Plant at Dearborn, Mich., dramatized the service. It revealed both employee creativeness and management appreciation.

Irving W. Van Aman, methods and standards analyst in the Manufacturing Services Division, was given $1,500, one of the highest suggestion awards ever made in that company, for his suggestion that gloves be salvaged. As a result of his prize winning recommendation, the *Ford Rouge News* reports: "Badly worn gloves and even some with tears in them are now reclaimed and recoated with a protective plastic coating instead of being discarded as waste." The story goes on to say that "Last year (1953), between July and November, the Salvage Unit, General Stores Department, sent out several hundred thousand gloves for reconditioning. Of these, 74.6% were returned for re-use after being recoated."

From the mass of accumulated evidence from every corner of industrial America, it is apparent that glove salvage savings will fit your plant—and fit it "like a glove".

Anxiety breeds tensions and inefficiency

Your Worst Problems Never Happen

By Dr. Donald A. Laird

MANY business people are in the same quandary as the maiden lady who is apprehensive that a man will break into the house. They imagine they are "just thinking ahead about the business". But a large share of their concern about business trends and planning springs from anxiety similar to what keeps the maiden lady looking under her bed. Maybe it will happen, you know.

Here are typical business puzzlings which, in many instances, reflect anxiety tensions rather than cool-headed logical thinking:

"Will the tax people be after us?"

"Am I spending too much, or too little, on advertising?"

"Will competitors bring out a line cheaper than ours?"

"Are subversives boring into our work force?"

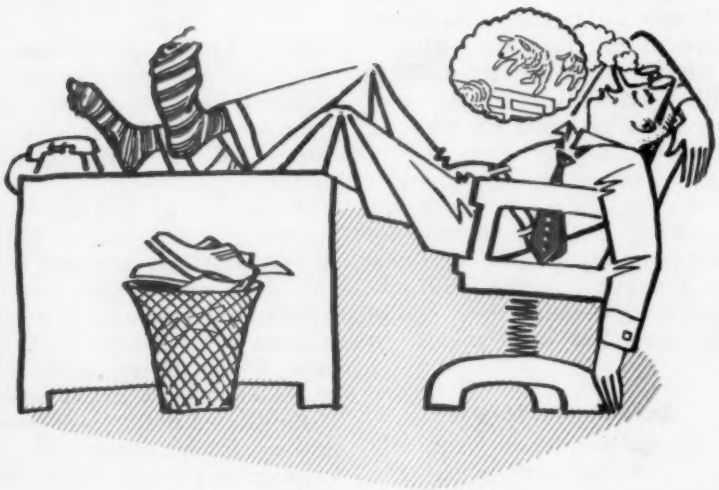
"Will the food and drug people jump on us?"

"Can the forecasts for next year be believed?"

"What would happen to our business if the bus line moved?"

"What will the union be up to next?"

Such questions may be real problems, of course. The point is, they provide the anxious person with



Dr. Laird's diagnosis and prescription for tension, the "business disease", has support in some of the promotional material issued in connection with National Foot Week. One of these releases takes exception with a time-honored taboo of office etiquette. It counsels:

"Put your feet up on your desk. The most common symptom of business worries is muscular tension. Raising your feet to desk level breaks up your normal muscular habit patterns and releases tensions in the large muscles at the back of your thigh. This (say the doctors) will rinse away your worries about business.

"Don't worry about scratching the desk. Follow this syllogism and take off your shoes. No shoe—unless it had moving parts—could possibly fit your complicated foot. Tensions cause heart trouble. You can't be tense and be barefoot at the same time. Take off those tight socks, too."

something ready-made to be bewildered about—hooks on which he can hang his vague anxieties. It is not the problems, but the bewildered, tense methods of thinking about them, and the disproportionate time devoted to them, that tell the story of anxiety tensions.

The tense executive, for instance, loses sleep wondering what "that man"—meaning his competitor, or the union leader or an inexperienced partner—will do next to ruin the business. The anxious executive tackles problems with grim seriousness, as if he heard the voice of doom booming in the distance. Ultra-conscientious, he approaches minor problems with an alarm reaction, as if fate hinged on them.

He has a helpless feeling that something is brewing which will put him—or the firm—behind the eight ball. Looking under the bed. No gaiety in life for him, until he loads up at cocktail hour or over the week-end.

The tense businessman sometimes tries to conceal his anxieties from customers with a false front of optimism and enthusiasm which he considers "good for the business". But his family, close associates, and probably his physician, are aware of his tensed condition and his anxious concern about ghosts that might turn up.

Putting on a show of false pep and hopefulness probably does not relieve his underlying anxieties. It may, in fact, make the anxieties worse in case he feels a bit of guilt about his false front.

He would be much better off to relax away some of the ghosts that haunt him, not to hesitate to hesitate about minor problems, to relax his forehead muscles and leg muscles several times daily—and, while they are relaxed, to enjoy that let-down feeling for a change.

The Relaxed Way

The relaxed executive, in contrast, can tackle a pending session with the union leader with an attitude expressed by: "Well, Big Joe has to get something out of us, or he'll be out of his job; let's figure out something that we can concede and he can crow about, and let him think we hate to give it."

This relaxed businessman can see some humor in a situation, even when he loses a customer, or when Big Joe slips one over on him.

He does not look for doom lurking in every problem that comes along. And he saves much bewilderment by deciding not to decide minor questions—as the Supreme Court decides not to consider many of the cases that are brought before it.

Confidential Reports and Bogey-Men

The wide circulation of dope sheets which give "inside" information about government and labor plans, is said to reflect executive anxiety tensions—more peering under the bed.

Tense businessmen seize upon the warnings the soothsayers make in these confidential reports as something else to fret about. It is not the bad news that makes them anxious. It is their already existing anxieties which make them look for something else to stew about. We recall that anxieties are vague and indefinite—the dope sheets give some hooks on which vague anxieties can be hung and thus make them seem less like ghosts.

Trade and commerce associations sometimes find their membership holds together better if their programs center around some of the bogey-men problems about which businessmen tend to be anxious. This probably does not reduce tensions, nor make them any worse. But the members surely enjoy hearing mass gripes which seem to confirm their own anxieties, and show they are not the only ones bewildered.

One of our leading industrial psychologists, Dr. Robert N. McMurry, has shown how anxiety tensions often incapacitate bright young executives so that their future promotions have to be limited. Or they may be sidetracked into consulting work, or let out when they would otherwise be in their prime.

In brief, as their bewilderment and tensions continue, they become worse. Businessmen try spontaneously to make up for this with devotion to the job and long hours of overwork.

But, inwardly they begin to feel less certain of themselves. Their aspirations seem to be threatened, not only by outside forces, but also by their own growing confusion. When this stage is reached, they often begin to blame others and show what Dr. McMurry calls "a surprising capacity for hatred, rivalry, and resentment." This aggressive aspect prods them to work still harder, to take on more responsibilities so no one else can have the glory—anything to reach their vague aspirations for success.

And so it goes, until at last the chain of consequences of

anxiety—hostility—overwork

reaches a point where something has to give. What gives will likely be where the bodily changes of the alarm reaction have been upsetting the steady state the most. In one businessman it will be his heart, another his ulcers, another his bowels. Another will develop skin disorders. Some of them have just "a nervous collapse".

Dr. McMurry has termed this incapacitating chain of tensions the executive syndrome—a grouping of symptoms which are usually found together in ambitious and once brilliant executives.

This syndrome may also occur in clergymen (who aspire to become bishops), in school teachers (who aspire to become superintendents—or married), in surgeons (who want to excel the Mayo brothers), or in women who are bent on social careers (and want to be the most popular in town).

Records indicate, however, that this syndrome is most likely to get hold of executives of big corporations who didn't take time to relax their jaw muscles, their shoulders, and their outlooks.

De-tensing Executives

Many corporations are now using care when hiring, or promoting, young executives. The hard-driving whizzer is being given a second, and a third look. Those inclined toward the tense side of life are switched off the main promotional tracks, but often kept around as consultants for the information they have. This side-tracking, of course, may be just another thwarting—and a real one this time—which sometimes makes the ambitious executive's tenseness worse.

A few corporations—very few—have full-time personality counselors, or psychiatrists, to help tensed executives de-tense. These counselors teach the first aid of relaxing muscles, and in addition lead the tensed person to evaluate and reorganize his outlook—the best vacation from overwork. Dr. Robert Tyson has reported that about 3 out of 5 of these counselors find it helps relieve the tensed condition if the executive reads something similar to what you are now reading.

They can use that new kind of vacation from overwork and tensions—the easing up of muscles and outlooks.

By the way, how are your abdominal muscles now? They may be more tense than you have realized. Give them a vacation by letting them relax.

Adjustable ramps overcome height differentials

Breaking the Bottleneck at the Loading Dock

By C. W. Choromanski
Vice President
Rowe Methods, Inc.
Cleveland, Ohio

ONE of the newest types of equipment designed to improve general handling, to lower costs, and to speed receiving and shipping operations is the powered adjustable ramp installed on truck loading and unloading platforms.

Too often, the receiving and shipping dock of a plant becomes a bottleneck in otherwise effective plant-wide handling operations, simply because no efficient means is used for the transfer of loads between dock and vehicle. This inefficiency is almost always a result of height differential. Unless this area is bridged properly, high speed, heavy load carrying mechanical handling equipment cannot be used to maximum advantage.

For a number of uncontrollable reasons, bed heights of motor trucks and trailers vary considerably. Modern trucks and trailers are built in a seemingly unlimited number of types and sizes. To design a fixed dock suited to the heights of all vehicles is of course impossible. Some firms do compute the average of all truck bed heights serving their plant on a regular basis, and design the dock to attain the mean average. Even so, the wide variance does not permit maximum handling efficiency. The average doesn't have any great significance when a particular truck backs up to the platform.

There's another factor, too, to be considered. Pneumatic tires and massive springs have resiliency, and although they have done wonders in the battle against damage from vibration and shock, they have greatly compounded the problem of transfer to and from docks. An empty vehicle rides at its highest point. When one of today's monstrous loads is placed in a vehicle, the springs and tires depress, and the dock height is no longer approximate to the height of the bed. In fact, the variation in truck bed heights compared to dock heights has been as great as 14 inches.



Typical situation at loading dock shows truck bodies at, below, and above fixed platform level. Adjustable ramps permit maximum use of mechanical handling equipment, save manpower and time, speed up operations, eliminate critical dock congestion, and avoid tying up vehicles for excessive periods of time.

The most common method of bridging the space between dock and vehicles of differing heights makes use of simple bridge plates. This equipment is not always successful, however, because of steep slopes which may result if the height differential is severe. A manually propelled truck, for example, operates at top efficiency on a level plane, or up a nearly flat slope, but the capacity handled falls off sharply when a grade is encountered.

If the slope is excessive, the operator is often required to make a running start. Otherwise, he may have to rely on assistance from other workers to move material from the lower to the higher level.

It is possible to reduce the degree of incline by lengthening the bridge plate itself. In such a case, the plate would have to be long enough to provide a relatively flat slope, and at the same time be strong enough

FEATURES TO LOOK FOR IN A POWERED ADJUSTABLE RAMP

1. Low installation cost.
2. Weather-proof construction, if located outside.
3. Ability to support rolling loads off-center or for cross travel. A high safety factor is important.
4. Ability to operate efficiently even at lowest temperatures likely to be encountered.
5. Designed for easy relocation in the event of plant changes and expansion.
6. Enclosed lubricated wearing surfaces for protection against dirt.
7. Engineered against dependence on a central compressed air supply if shipping or receiving departments work overtime.
8. Layover arms or a lip which is heavy enough for the service required. Layover arms must have ample bearing on the truck bed to minimize pressure, and should be rounded on the bottom to prevent scuffing.
9. Equipped with bridge plates, not less than 12 inches effective length, crowned and beveled, and in two sections to compensate for trucks out of level in a horizontal plane.
10. Engineered so that the deck will not drop if vehicle pulls out unexpectedly.
11. Minimum of moving parts, sealed units wherever feasible; simple push-button controls, clearly marked.
12. Critical clearance (outside edge to outside edge of layover arms) not to exceed six feet. (Maximum allowable width of trucks or trailers is eight feet, and the usual inside door opening is about seven feet.

to support heavy loads. All too often, the added length and extra strength make necessary a bridge plate which is too heavy and bulky for practical application.

The powered adjustable ramp provides a solution for these problems. It is designed to adjust to any required height, and makes greater lengths and more gentle slopes feasible because of its powered operation. This type ramp is engineered to lift the empty deck, and to hold a full load. It is fitted with a hinged bridge plate at the forward end. In its use, time and labor are saved. Few adjustments per truck are required. Equipment can roll freely in and out of highway trucks without regard to the discrepancy between dock and truck bed height.

When powered platform or fork trucks are used, the slope may be steeper than that for manually operated trucks. The angle of slope in determining the length of the powered adjustable ramp is governed by the wheel base and underclearance of the equipment used.

Where light highway equipment is worked, or a shop truck is extra heavy, or if a loaded shop truck exceeds 50% or more of capacity of the rear axle of the highway carrier, a floating action is desirable in the powered ramp. This is vital to give smooth operation and to compensate for sag and rebound of the truck bed.

Floating action permits the ramp to raise and lower with the truck bed as a load passes over. It also insures alignment at all times during loading or unloading.

With fork trucks, particularly of large capacity, the sag and rebound are intensified during loading. When loaded, most of the combined weight is carried on the front wheels of the fork truck, and as the rolling load passes from a solid dock to the bed of the motor truck, the spring and tire deflection combine to create a sag that may be as much as five inches.

This sag and rebound of the truck bed, as the heavy rolling load passes back and forth, results in a condition that cannot be overcome by short, light, loose dock plates. In fact, there is a tendency to throw the plate and start the truck rolling. In addition, such a bump might damage the running gear of the fork truck. Serious injury to personnel often accompanies such a situation. Obviously, under such heavy loading conditions, a floating action ramp is a "must".

The first point to consider when planning for the installation of adjustable dock ramps is the adjustment range desired, above or below the existing dock level. With this information, selection of the proper length ramp for most efficient operation is simplified. The next point to consider is the nature of the handling equipment itself. The lower the power of the unit, the more gentle must be the slope of the ramp. As previously noted, the grade clearance and wheel base of handling equipment to be used are other important factors to be considered in such planning.

Characteristics to look for in the ramp installation are listed in the accompanying table.

It is a simple matter to review conditions in a given plant and make a cost analysis of the load transfer cost in and out of a vehicle. A comparison should be developed of the cost of transfer between vehicles and docks vs. the cost of handling with the same equipment on unobstructed floor space.

It has been the experience of many companies that the powered adjustable ramp permits two or three times the number of highway trucks to be worked per dock space, with corresponding savings in floor space and dock labor required for the entire operation. When large quantities of freight are handled, amortization time may be accomplished in less than one month!

A receptionists'-eye view of--

SOME SALES TYPES

By C.H.J. and B.J.

Credit an assist to R. W. Moore, Purchasing Agent of The Eimco Corporation, Salt Lake City, for providing this interesting and analytical study. C. H. J. and B. J., who unburden themselves herewith, are the astute and observing young ladies presiding at Eimco's reception desk. Their original manuscript, prepared in approved bulletin form, was captioned:

Sales Help #1001

The following note is appended: "Any similarity between these characters and Eimco salesmen is purely coincidental (we hope)."

EVERY profession has its pet peeves and little idiosyncrasies. And the life of a receptionist ranks among the top to overcrowd the mental hospitals.

The Qualifications of a Good Receptionist

1. She must have eyes in the front, sides, and back of her head.
2. She must at all times possess an engaging smile (Colgate), a certain charm, and a soothing voice.
3. She must retain a fine sense of humor and a keen understanding of her fellow man.
4. She must be able to register genuine surprise, sympathy, indignation, disgust, and delight.
5. She must be an exceptional listener, liar, and lecturer.
6. She must perform all duties set before her—whether they be pleasant, or not so pleasant.
7. She must treat all callers as though they are goodwill ambassadors from Itchovania, and be able to present a concise, but precise travelogue of Our Fair State.
8. All in all, the receptionist must be "Quite a Kid!"

Don't Underestimate the Receptionist's Part

The number one thing a salesman should always remember when calling is that his product is never the only one on the market that will do the job or suit the purpose—although he will try to convince you otherwise. He can always be replaced. There is always the competition to look out for.

So you must humor the receptionist, because she does play a big part—whether you believe it or not—in selling your product.

A few of the types of salesmen the receptionist comes in contact with are:



The Gossip

This is one of the worst pests, and one of the hardest to exterminate. He wants to know what kind of a car the boss drives, how many children he has, and how old he is. Just as the receptionist starts to cut him short, the boss comes in and catches the tail end of the conversation. The receptionist turns scarlet and might as well have been telling him some "real dirt"—she looks that guilty.



The Mumbler

This is one you can't recognize immediately by looking, until the receptionist asks what his name is and whom he would like to see. "My name is John Cmmmmnnnn, from Ffnff & Company, to see Mr. Bffnff." So you repeat and repeat without getting anywhere, and finally turn him over to the P.A. in desperation. He turns out to be the President of the United States and wanted to see the boss, of course.



The Relative

Sometimes receptionists choke to death trying to be nice and polite to this guy. He's more familiar with the receptionist than her own mother. She's either "Babe", "Sister", "Dearie" or—if he's not too intimate—just plain "Girlie". The old boy's armor is impenetrable; receptionists' daggers don't even make a dent.



The Pincher

This man's actions speak for themselves. Not much more need be said—except that the receptionist needs a stainless steel corset equipped with 240-volt, 50-cycle, 3-phase, and what have you. What hurts more than the pinch is the look the boss gives you when he thinks the little gal has encouraged the flirting. If he only knew!



The Clam

The receptionist never knows whether this man is from the F.B.I., a customer, or a salesman. He wants to see The Manager. She asks if it concerns selling, buying, or "Just what please?" Perhaps she can direct him to a specific department that would be concerned. "My business is PERSONAL," he sneers. So, he sees the Manager, and the boss gets stuck for 50 tickets to the Firemen's Ball.

This is the fellow who hovers over the counter, telling the receptionist what a "real live doll" she is—that her eyes are the bluest, her lips the reddest, her "figger" the neatest—and how he'd love to buy her a beer some night after work. He doesn't know that the receptionist went to school with his "little woman", that she knows all about his six kiddies, and has heard plenty of rumors about what a Wolf he thinks he is, and she wouldn't be caught dead with him.



The Shy Type

This guy tiptoes up to the desk, looks fore and aft, coughs a few dozen times, blows his nose, turns purple in the face, drops his briefcase, and—after retrieving all of his papers—wheezes, "I really don't know exactly whom I want to see." This type salesman is really a problem. Invariably he gets in to see the wrong man, gives him the wrong pitch, and finally leaves after he learns that he is calling on the wrong company.



The Peeker

Believe it or not, the receptionist has other work to do, and it's out there on her desk. Mr. Peek-A-Boo slyly looks over the gal's shoulder, expecting to latch onto some "real inside dope". This is one of the most irritating habits, because she's embarrassed too. At the moment, she happened to be writing a letter to the boy friend.



The Sneaker

This gent wears tennis shoes, dark glasses and a small lilac bush in his hat brim, so that he can sneak past the counter and whip down the hall unseen. But, it's a funny thing—the gal at the desk can usually smell him coming (the lilacs, no doubt!). And she usually can catch up with him unless he can beat her to the office door marked "Men".



The Cocky One

My! When this boy blows in, the gal at the desk is really supposed to bow three times and curtsy. He flourishes a fancy card under the receptionist's nose, gives her the old bored look and booms, "Tell Mr. So-n-so that Mr. —— is here!"



The Blabbermouth

Yak, Yak, Yak!



The Masher

New Law of Interstate and Intrastate Transactions

Your rights and liabilities and legal recourse vary according to the nature of the transaction

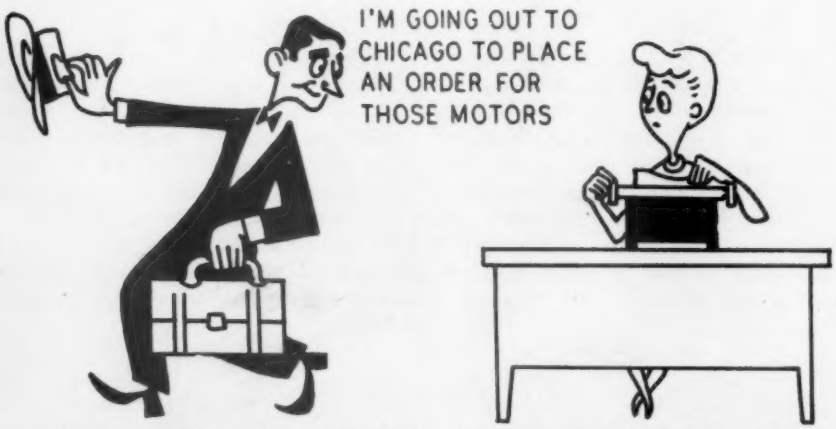
By Leo T. Parker

A FEW days ago I received an interesting letter from a reader, as follows: "Several months ago I read your article stating various advantages to purchasers who transact interstate business, rather than intrastate. Such advantages relate to lower taxation, the collection of damages from carriers for merchandise lost in transit, the Fair Labor Standards Act, injury suits, etc., etc. At present I am interested in knowing whether a contract of sale signed by a purchaser in a foreign state, where the seller is located, makes the transaction intrastate, although the merchandise is shipped to the purchaser in another state. Also, if the contract of sale specifies that the merchandise shall be shipped f.o.b. the seller's location, is the contract controlled by laws of the state in which the seller is located? I have a suit to defend and shall appreciate your detailed information on these points. If the contract between the buyer and seller is uncertain as to whether the deal is interstate, by what rule does the court decide the case?"

Fortunately last month the higher court rendered an important decision answering both these first questions. Both answers were in the negative. Other higher courts hold that past custom between the buyer and seller determines whether a contract in controversy involves interstate or intrastate commerce.

For example, in Standard Sewing Equipment Corporation v. Motor Specialty, Inc., 57 N. W. (2d) 706, the testimony showed facts as follows: A purchaser signed a contract in Wisconsin with the Standard Sewing Equipment Corporation to purchase 100,000 Spec. No. 192 motors at $2.91. All merchandise was to be f.o.b. Racine, Wisconsin.

The purchaser's principal place of business is in the city of New York, but it also maintains places of business in the cities of Chicago and Los Angeles. It has no place of business in Wisconsin and has no officer, agent, or employee who is located in Wisconsin. The seller, pursuant to the contract, manufactured and shipped approximately 31,000 of the motors f.o.b. Racine, Wisconsin, consigned to the purchaser at its place of business in Chicago. The only correspondence passing between the parties with reference to the contract is a letter reading as follows:



DOES IT MAKE ANY DIFFERENCE, IN LAW, WHETHER CONTRACT IS SIGNED IN BUYER'S OR SELLER'S OFFICE?

"Will you please send your invoices to New York in the future, as all these invoices are paid from this office. Please continue to ship the motors to Chicago, and they will redirect them to either Los Angeles or New York from that point."



For More Information Circle No. 160 on Inquiry Card—Page 17

Stating these details more briefly: The purchaser has offices outside Wisconsin, but signed the purchase contract in Wisconsin. All shipments were to be made f.o.b. Racine, Wisconsin, and the purchaser mailed payments for the merchandise from its New York office to the seller in Wisconsin.

A state law of Wisconsin provides that no foreign corporation shall transact business in the state until it files in the office of the secretary of state a copy of its charter, and receives a license to do business in the state.

The seller failed to manufacture and ship the balance of the 100,000 motors and the purchaser sued the seller for damages. The latter argued that the purchaser is an Illinois corporation and had not obtained a license to do business in Wisconsin. Consequently, since the order was signed at the seller's office, the above state law rendered the contract void, which prevented the seller from being liable in damages to the purchaser for breach of the contract.

Effect of F.O.B. Point

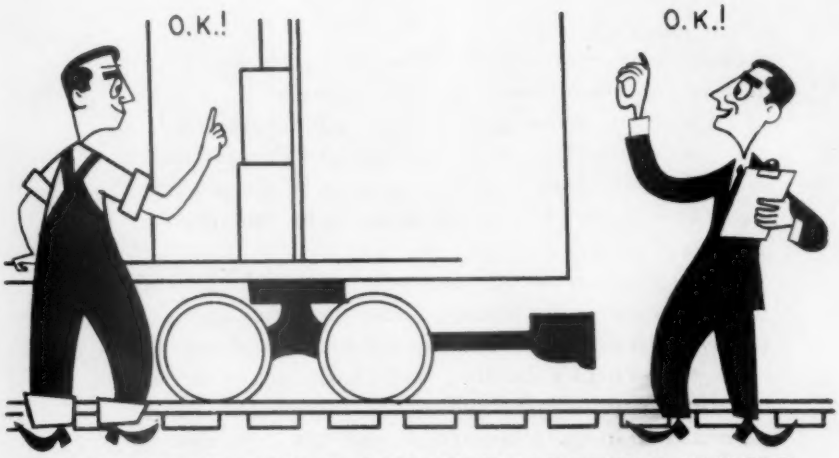
In other words, the seller contended that the fact that the purchaser signed the purchase contract while in the state of Wisconsin, and the motors were shipped f.o.b. Racine, Wisconsin, the transaction was intrastate, and not interstate. Also, the seller argued that because the contract itself did not specify the point of destination outside of Wisconsin to which the motors were to be shipped, the contract was open to the construction that some of the motors might have been shipped to some other points in Wisconsin, in which case there would be a transaction involving intrastate and not interstate commerce.

The higher court held that the transactions between the buyer and seller were not intrastate, but interstate, whereby the purchaser could sue and recover damages from the seller for breach of its contract. In this respect the higher court said:

"The first point to be considered is the construction of the words 'f.o.b. Racine' appearing in the contract. When used with respect to a sale of merchandise 'f.o.b.' means 'free on board' the vessel, cars, or other conveyance which is to transport it to the buyer. The use of 'f.o.b.' in a contract of sale of goods evidences a shipment of goods. Therefore, the use of such term in the contract in the instant case required shipment of the goods by the defendant seller and the movement of the same in commerce. Whether it was contemplated by the parties that any of the motors were to be shipped to points of destination in Wisconsin, or whether all were to be shipped outside of the state, the trial court was entitled to consider the facts constituting the surrounding circumstances, and the practical interpretation of the contract by the parties themselves, inasmuch as the phrase 'f.o.b. Racine' is ambiguous with respect to point of destination."

Also, this court held that the fact that the purchaser went into the state of Wisconsin to sign the purchase contract did not result in the contract being controlled by laws relating to intrastate transactions. In this respect, the higher court said:

"The mere act of a foreign corporation in going into another state and there making a contract for the purchase of goods to be shipped in interstate commerce, does not constitute doing business within the state, as the making of the contract is incidental to a transaction involving interstate commerce. It is therefore our conclusion that the contract in the instant case contemplated shipment of the motors to a point of destination outside of Wisconsin so as to involve interstate commerce."



ONCE AN INTERSTATE SHIPMENT HAS BEEN ACCEPTED, GOODS ARE NO LONGER IN INTERSTATE COMMERCE

Law of Interstate Shipments

Another reader wrote in part, as follows: "At what moment do goods shipped in interstate commerce become subject to intrastate laws?"

The answer is: An interstate shipment remains interstate until the goods actually are delivered to and accepted by the consignee.

For example, in Chapman v. United States, 151 Fed. (2d) 740, it was shown that a carload of sugar was consigned, freight prepaid, to a purchaser who broke the seal on one of the doors and removed part of the sugar.

In subsequent litigation the court was asked to decide whether this sugar remained in interstate commerce after the car seal was broken.

The answer to this question directly affects suits by sellers against consignees for payment of the shipped goods; suits by employees injured while unloading cars; suits involving the Fair Labor Standards Act, unemployment compensation, and workmen's compensation; suits involving damage to or loss of the goods, and many other suits including prosecution of persons who steal merchandise from the car.

This higher court held that after the car seal was broken by the consignee, and before actual acceptance by the consignee, the sugar remained in interstate commerce. The court said:

"We think it cannot be said that the interstate transportation of the sugar had been completed by arrival at destination and delivery there to the consignee. Ordinarily a carrier's contract is not fulfilled until the goods are in the possession of the consignee, and the general rule is that a shipment does not lose its interstate character until it arrives at its destination and is there delivered."

For comparison, see O'Kelley v. United States, 8 Gir., 116 F. 966. In this case an interstate shipment had



so pure it's used to filter the "wonder drugs"

SOLKA-FLOC®

99.5% Chemically Pure Cellulose

SOLKA-FLOC guarantees a clear, pure filtrate. Its finely-divided cellulose particles mesh and bond to form the perfect filter barrier. That's just one of many reasons why producers of antibiotics use SOLKA-FLOC as a filter aid.

It can be handled readily with a knife, will not gouge . . . gives a more stable cake, will not bleed . . . gives longer life to the precoat . . . is chemically inert, easily washable . . . can be burned to recover any valuable solids remaining.

SOLKA-FLOC offers you a wide range of grades, enabling you to obtain any desired combination of flow rates and efficiency of filtration. Whatever your filter, it may be just what you need to solve your filter problems.

Write to our Technical Service Department PF-8, in Boston, describing your problem in detail.

BROWN QUALITY COMPANY, Berlin, New Hampshire
CORPORATION, La Tuque, Quebec

General Sales Offices: 150 Causeway Street, Boston 14, Mass.
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been delivered to the consignee, and control over it by the carrier had been completely surrendered to the consignee. The testimony showed that the car containing the shipment was set on a spur track, and the consignee was notified of its arrival. On the receipt of this notice the consignee accepted delivery, removed a part of the shipment, closed the car door, and secured it with the consignee's private padlock.

The higher court held that this merchandise was then in intrastate commerce, and said:

"The decision is based upon a finding of surrender of control of the shipment by the carrier to the consignee."

Customary Practice

Another important point of the established law is that a common carrier always is liable for damage to or loss of shipped merchandise which it impliedly, or from past custom, accepts from a consignor, in either class of commerce.

For illustration, in Farmers Gin Co. v. Texas, 232 So. (2d) 890, a shipper sued a carrier for damages on account of destruction by fire of 23 bales of cotton while on the platform of the carrier.

The shipper contended that the carrier was liable because he had delivered the cotton on the platform, whereby the carrier became charged with the responsibility of exercising ordinary care to protect the cotton from loss and that the negligence of the carrier was a proximate cause of the loss.

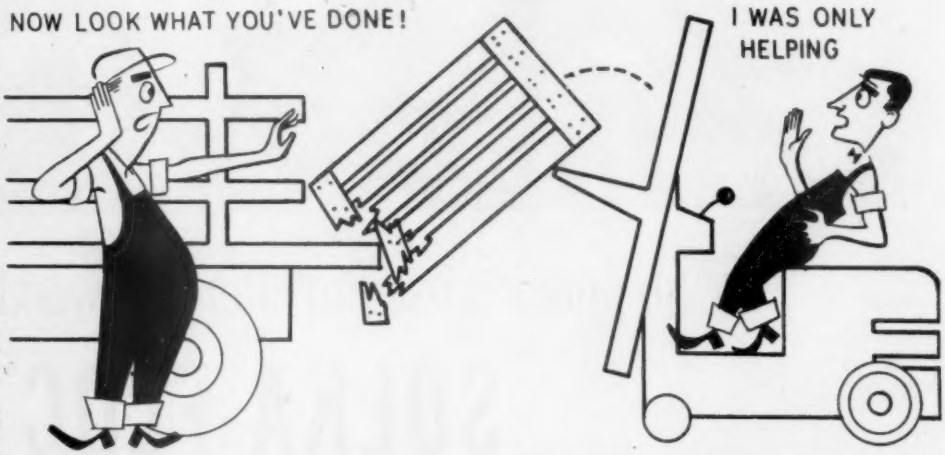
During the trial the testimony showed that a prevalent custom had existed more than three years prior to the fire for this shipper to deliver merchandise to the platform of the carrier. After the delivery of the merchandise on the platform it was the usual custom for the carrier to exercise control over the merchandise and at its convenience load it into cars for shipment. Further evidence showed that the platform was not enclosed with sides or covered by a roof so as to protect merchandise from the hazards of fire; nor was the platform equipped with an automatic sprinkler system, or with a fire hydrant and fire hose, or with chemical fire extinguishers, or any other suitable device by means of which to control and extinguish fire.

The evidence further showed that the carrier had failed to provide a watchman to patrol its platform, or other facilities for the purpose of discovering and extinguishing a fire. The jury held the carrier liable, and the higher court approved the verdict, saying:

"Without attempting to set forth the supporting circumstances, it must suffice to say that in our opinion the evidence was sufficient to authorize the jury in finding . . . that one or more of the foregoing omissions constituted negligence on the part of appellee (carrier) and a proximate cause of the damages for which recovery is sought."

The higher courts now hold that a consignee is primarily liable for payment of freight charges, if he accepts the shipment although in no sense or manner did he at any time agree to pay the freight charges.

For example, in Union Pacific v. Eyres Transfer and Warehouse Company, 121 Pac. (2d) 340, it was disclosed that a corporation is a shipper of merchandise. It assembles freight of different parties which is consolidated into carload lots and shipped to a designated point, thus reducing the rate to its customers from what it would be if the individual lots were shipped separately.



THE COURTS HOLD THAT UNLOADING IS PART OF THE CARRIER'S RESPONSIBILITY IN TRANSPORTATION

The corporation shipped a carload of freight from Los Angeles to Seattle. This car was consigned, by the bill of lading, to the Eyres Transfer and Warehouse Company. The Eyres Company was notified of its arrival, and was informed that the car had been billed to it, collect. The Eyres Company refused to accept the car. Thereafter, the corporation (shipper) induced the carrier to deliver the car to the Eyres Company, on promise to pay the freight. Soon afterward the corporation became insolvent and could not pay the freight bill. Therefore, the carrier sued the Eyres Company. In holding the latter liable for payment of the full freight bill, the court said that under such circumstances the consignee is liable for payment of freight charges.

Also, see Louisville and Nashville v. Central Iron Company, 265 U. S. 59. Here the Supreme Court of the United States held that a consignee who accepts a shipment automatically becomes liable for the full amount of the tariff charges, whether or not such charges are demanded at the time of delivery.

And again, in the case of New York Central and Hudson River R. Company v. York, 256 U. S. 406 it was shown that by a mistake of the carrier, the freight charges collected from the consignor were less than the lawful rates established by the Interstate Commerce Act. The court held that the consignee was liable for the balance of the freight charges, irrespective of a contract between the consignor and the consignee to the contrary.

And in Central Warehouse Company v. Chicago, 20 F. (2d) 828, 829 it was shown that the initial carrier by mistake noted on the bill of lading that the freight charges had been paid by the consignor. Later the mistake was discovered, and the consignee was sued for the charges.

The higher court held the consignee liable.

Substitute Carriers

Generally speaking, an initial carrier is liable for loss of or damage to shipped goods caused by a substitute carrier.

For example, in Schade Transfer

THESE 3 SUN GREASES WILL DO 95% OF YOUR GREASE LUBRICATION JOBS

—save you the cost and trouble of stocking a large number of "special purpose" greases



FIBROUS • Sun Grease 844X

Has exceptional oxidation stability under high temperature conditions. Recommended for all antifriction bearings. A general-purpose, high melting point lubricant for pressure gun and grease cup application.



BUTTERY • Sun Grease 300A

Especially designed for pressure lubrication of bearings operated at normal speeds and temperatures. Can be used in pressure guns, compression grease cups, or pressure lubrication systems. Has high water resistance and excellent pumpability at low temperatures.



TACKY • Sun Grease 897

For open gears, chains, slides, cams, linkages and bearings. Used whenever "throw-off" must be avoided. High adhesive and cohesive characteristics. An excellent lubricant that is water resistant and does not need frequent application.

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For lubrication points that do require special kinds, Sun offers a total of 78 other greases with a wide range of properties and characteristics.

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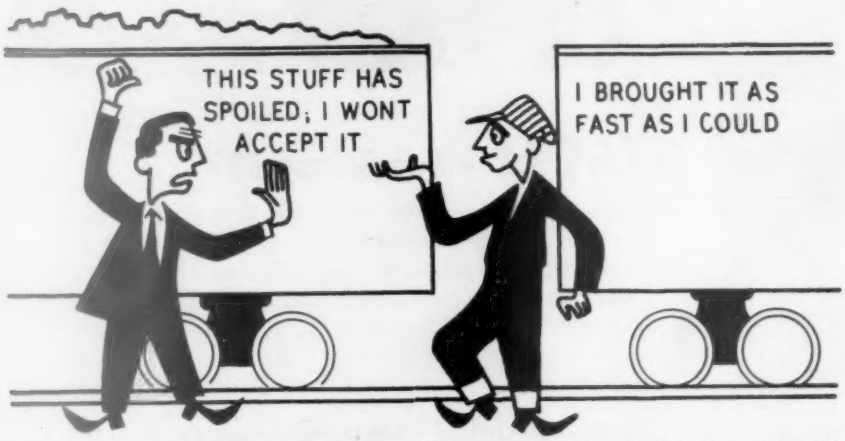
& Storage Company v. Alabama Freight Lines, 254 Pac. (2d) 800, the testimony showed facts, as follows: The Schade Transfer & Storage Company is a common carrier of property by motor vehicle. A shipper delivered to the carrier a reel of lead cable for shipment. The carrier's driver, not being able to unload the same without help, called a contractor and requested a winch, to unload the cable. The winch slipped and the cable was damaged.

In subsequent litigation the higher court held the initial carrier liable, saying:

"With respect to common carrier's liability for damage to goods transported by it, the unloading is a part of such transportation."

And recent laws changed the old law that a shipper must sue the carrier which caused the loss of or damage to the shipped goods.

Prior to the Carmack Amendment to the Interstate Commerce Act, a shipper whose merchandise was damaged during interstate transportation had to sue the carrier in whose custody it was when the damage occurred. If such carrier was not the one with which the shipment originated, the suit had to be grounded on negligence, and proof frequently was



UNLESS NEGLIGENCE IS PROVED, CARRIER'S DUTY IS LIMITED TO MAKING DELIVERY IN A REASONABLE TIME

difficult. All shippers had much trouble in determining just where or when the damage or loss occurred.

The Carmack Amendment requires the carrier receiving goods for such transportation to issue a receipt, or bill of lading. Therefore such initial carrier is made liable "to the lawful holder thereof" for any loss or damage caused by it or by any other carrier to which such goods were delivered or over whose lines such merchandise passed. Conversely, the initial carrier is protected against loss of freight charges, irrespective of the ordinary reason.

For example, in Southern Railway Company v. Mayer Myers Paper Company, 232 S. W. (2d) 20, it was shown that the Mayer Myers Paper Company purchased paper from the Kline Paper Stock Company, which had agreed to pay the freight charges. However, through error, the latter did not prepay the freight charges.

The carrier did not inform the Mayer Myers Paper Company that the freight had not been paid. Later the carrier sued the Mayer Myers Paper Company for the freight charges. In holding the latter liable, the higher court said:

"Under the Federal statute, the carrier's inadvertent failure to inform the consignee that freight charges had not been paid by the consignor does not relieve the consignee from payment."

Usual Liability

Recently a higher court laid down this law: A common carrier is not an absolute insurer against any loss, damage, or injury to merchandise received for shipment. Its liability is limited to any loss, injury or damage caused by it or by a succeeding carrier to whom the merchandise may be delivered, and such liability is predicated upon some default in the common-law duty, as a common carrier. Moreover, if the shipper alleges that damage to shipped goods resulted from some carrier's negligence, the shipper will lose the suit if he fails to prove that the one carrier's default in its legal duty caused the loss.

For illustration,, in Scott County Milling Company v. Thompson, 255 S. W. (2d) 121, the testimony showed facts, as follows: The evidence established that Scott County Milling Company is engaged in the business of buying and selling grain. It delivered to a carrier one car of corn, certified as No. 1 white corn, after inspection and grading by a licensed government inspector. The corn was consigned by bill of lading to the order of Scott County Milling Company.

Freight in the amount of $488.20 was prepaid. The bill of lading was attached to a sight draft in the sum of $3,575.00 payable in Los Angeles. The carrier's lines not extending to the delivery point, the shipment was interlined with the Southern Pacific Lines.

Later the consignee refused delivery because the corn did not grade over No. 3 on delivery.

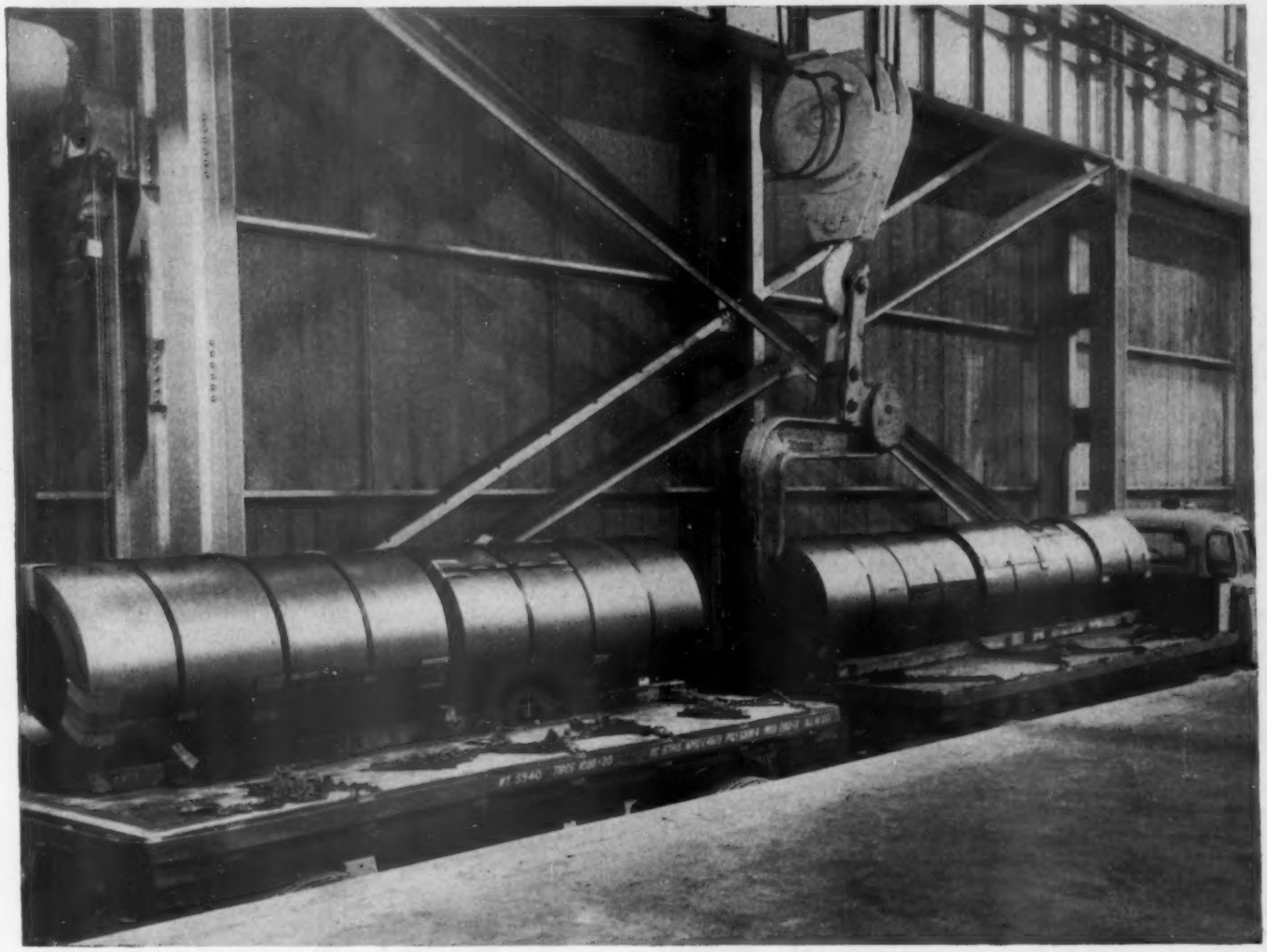
In subsequent litigation, the higher court held that if the initial carrier was not liable, because no definite and dependable proof was given or introduced during the trial that the initial carrier or connecting carrier had breached any common-law duty in respect to transporting corn to the destination within a reasonable time, then the delivering carrier is not liable unless the testimony shows that it permitted the corn to deteriorate by failing to notify the shipper that the corn was unclaimed or refused. This court said:

Carrier Becomes Warehouseman

"The liability in this case must arise from some default in the common-law duty of the defendant as a common carrier. The defendant must have done some act not justified by the common law, or omitted to do some act required by that law, which caused the loss. If the pleader (shipper) alleges negligence, he must stand upon his allegations and prove the negligence alleged, or fail. To prove negligence for failure to deliver the property within a reasonable time, it was incumbent upon plaintiff (shipper) to show, first, that the corn was not delivered within a reasonable time and, secondly, to show that the delay in delivery caused the injury complained of."

All higher courts hold that while a common carrier is liable for all ordinary loss of or damage to

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First commercial shipment of cold-reduced sheets ready to leave the mill—January, 1954.

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shipped goods, a warehouseman never is liable unless the owner of the goods proves that the warehouseman, or its employees, were negligent. As above explained, the liability of a common carrier continues after the transported goods have arrived at their destination and until the consignee has been notified of their arrival and has either accepted delivery or has had a reasonable time to call for the goods and take delivery.

On the other hand, where the testimony shows that the consignee of the goods refused delivery, or otherwise expressly or impliedly authorized the carrier to act as warehouseman, the carrier cannot be held to a more severe responsibility than that of a warehouseman.

For instance, in Dohrmann Company v. Owl Transfer and Storage Company, 143 Pac. (2d) 441, it was shown that a shipper notified a common carrier to call for certain merchandise. The carrier sent its truck and the driver loaded the merchandise on the truck. The driver started to make the delivery, but it was too late to unload the merchandise when the truck arrived at the point of destination. The shipper, over the telephone, advised the carrier to put the truck with the merchandise in its garage over the night. During the night the garage and its contents were destroyed by fire.

The legal question presented the court was whether the loss of the goods, through no negligence on the part of the carrier, relieved it from liability, as a warehouseman. After listening to all testimony, the higher court held that the carrier's liability was automatically converted to that of a warehouseman, whereby it was not liable unless the shipper proved that the fire resulted from negligence of the carrier or its employes. The court said:

"Having concluded that the status of respondent (carrier) became that of a warehouseman, the duty was then cast upon appellant (shipper) to show that the fire resulted from some negligence of respondent."

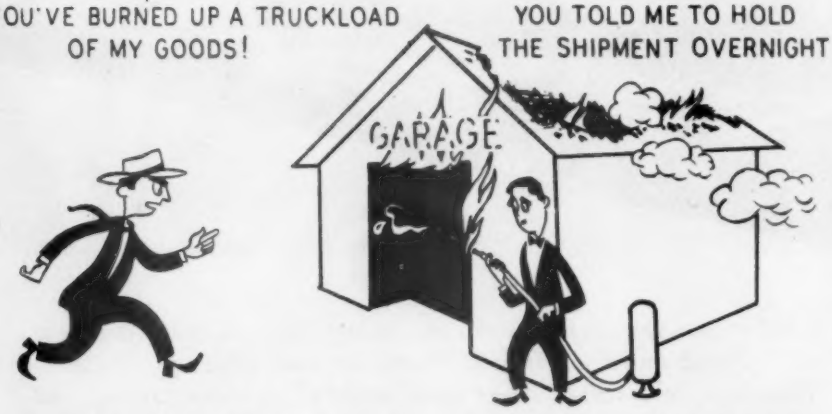
Shipper Has Preference

An important point of law, as decided by the higher court recently, relates to the liability of a common carrier as a warehouseman. If the carrier acts as a warehouseman it is liable for loss or destruction of shipped goods only as result of negligence of its employees. If the carrier is liable as a common carrier it is liable as an insurer, except for losses caused by fault of the shipper, inherent defects or quality of the merchandise, Act of God, and common enemy.

According to a late case a warehouseman who transports merchandise is liable as a common carrier unless he proves positively that his responsibility definitely had shifted to that of a warehouseman.

See Vanderbilt v. Chelson Fireproof Storage Warehouses, 80 N. Y. S. (2d) 302. Here the higher court held that a warehouseman's liability for loss of and damage to goods either as a warehouseman or as a carrier must be measured by the rule of absolute liability of a carrier, rather than the rule applicable to warehouseman, unless the warehouseman proves conclusively that he was acting as a warehouseman at the time the goods were lost or destroyed.

In this case it was disclosed that a shipper turned over his goods to a warehouse company in New York for storage until he asked for delivery of the goods in another state. The shipper was required to sign a shipping order and bill of lading, as consignor, and pay the freight charges.



EXTENT OF CARRIER'S LIABILITY DEPENDS ON WHETHER HE IS ACTING AS A CARRIER OR WAREHOUSEMAN

In subsequent litigation the court held that the warehouseman was liable as a common carrier for loss of the goods.

Still another important point of law is that a warehouseman who acts as a common carrier cannot ordinarily limit his liability for loss or destruction of goods. See National Blouse Corp. v. Felson, 79 N. Y. S. (2d) 765.

The facts of this case are that a shipper was given a bill of lading which contained a clause fixing the maximum liability of common carrier for loss in transit.

In subsequent litigation, the court held that such a limitation clause is void unless the shipper is given a choice of rates depending on valuation of the goods. In other words, if the shipper is not given the choice or opportunity to pay a higher rate and have full coverage, the limitation clause is void.

Law of Forwarders

According to a recent higher court if a "forwarder" assembles various lots of goods for transportation in carload lots, he has common carrier liability. Hence a forwarder may be liable for loss or injury to a shipment resulting from all causes except Act of God, inherent quality of the merchandise, shipper's fault, or public enemy of the United States. (See Merchant Shippers Ass'n v. Kellogg Express & Draying Company, 170 Pac. (2d) 923, California).

In case of loss or injury to the shipped goods, the forwarder is obligated to pay the full amount of damages to the shipper, or consignee, and then resort to a suit to recover this amount from the common carrier which caused the loss or injury to the merchandise during transportation.

Therefore, the shipper or consignee is relieved from responsibility, and necessity of determining the identity of the carrier which caused the loss or injury to the shipped merchandise. This law is particularly advantageous to shippers, and also to purchasers, or consignees.

On the other hand, the courts

(*Please turn to page* 282)

ON A "SPLIT-SECOND" SCHEDULE

Muzak and Railway Express make beautiful music together*



*Muzak — Reg. U. S. Pat. Off.

Listeners to "Music by Muzak" in many parts of the nation have no idea of the key role played by Railway Express in bringing these musical interludes to them. So vital is this customized service that the people at Muzak will tell you that their success depends largely on Railway Express' efficient handling.

Timing is a vital factor in planning the movement of tape-recorded Muzak music to franchised outlets in 75 cities from coast to coast. A "split-second" schedule must be maintained because of timed program releases. Every four days, packages of tape recordings, each containing 10,800 tunes, speed via Railway Express to key centers. From these points, the tapes travel on a highly complicated 60-day cycle. Every step of the way, Railway Express is in complete control of the pre-arranged shipping schedule.

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No size or weight limit. You can use big cartons. No need to repackage into smaller units. Cuts your cartage costs.

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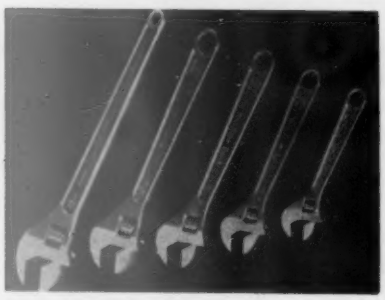
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New Products Ideas



You can get more information on any new product shown in this section. Just check the number that follows each item and circle the corresponding number on the Inquiry Card, page 17. Drop the card in the mail and we'll do the rest.

New Forged Wrenches



Five open-end wrenches are offered by Ampco Metal Inc., 1745 S. 38th St., Milwaukee 46, Wis., as forgings. Eliminated are heavy, bulky sections, common in such tools. They have the same flexibility, balance and appearance with approximately 109% less weight due to the alloy steel used. In addition, there is a 30% increase in strength. Test loads passed by the different sizes range from 700 lb./in. to 2800 lb./in.

Circle No. 41 on Inquiry Card—Page 17

Hydraulic Pallet Truck

Lewis-Shepard Products Inc., Watertown, Mass., is bringing out a lightweight hydraulic pallet truck for use with single or double face pallets and skid platforms. It carries 2000 lb. loads with minimum dead weight. With forks 48″ long by 27″ wide, the truck weighs only 250 lb. There are five other models with fork lengths ranging from 32″ to 60″. The trucks have no grease points; sealed bearings or self-lubricating bronze bushings are used throughout.

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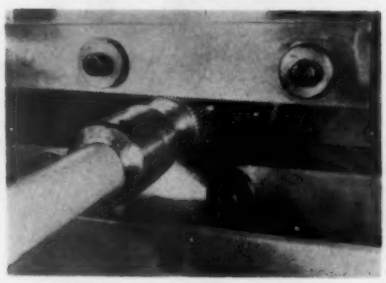
Drill for Tight Spots



Maintenance men, working in hard-to-get-at places will like a drill, No. 123, offered by Stanley Electric Tools, New Britain, Conn. with ½″ capacity in steel and 1⅜″ in wood. Construction of back spade handle allows it to be removed for even shorter chuck line length. Pipe handle is also removable. Key type chuck with key receptacle in handle gives easy accessibility. Chuck speed with no load is 550, full load 330. Another Model, No. 383, has ⅜″ capacity in steel, 1⅛″ in wood and a chuck speed of 800 with no load, 580 with full load. Both drills may be obtained in 115, 125, 150, 230, or 250 v as specified.

Circle No. 43 on Inquiry Card—Page 17

Splines, Serrations, Oil Grooves on External Parts



A new process for producing splines, oil grooves, serrations and similar shapes is announced by Michigan Tool Co., 7171 E. McNichols Rd., Detroit 12, Mich. What makes the process possible are machines known as Roto-Flo spline rollers. Rolling splines or similar shapes on these machines, which are currently made in three sizes, is a cold working process. The metal shaft is placed between the forming racks and emerges in a few seconds with the teeth completely formed at any desired position along the shaft. The resulting splines have a high degree of accuracy along with excellent surface finish. Since the metal is displaced and not removed, parts are made to the pitch diameter before forming. The result is greater strength from cold working of the part and increased production over other methods.

Circle No. 44 on Inquiry Card—Page 17



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CLARK'S L.P.-GAS CARLOADER*

reduces engine maintenance, eliminates obnoxious exhaust fumes

1. Greatly reduces engine maintenance:

———eliminates unburned carbon deposits and crankcase dilution.

———eliminates fuel pump and complicated carburetor adjustments.

2. Eliminates obnoxious exhaust fumes:

———L.P.-Gas provides almost perfect combustion, excellent for indoor operations.

3. Provides safe, efficient operation:

———vacuum ignition switch is interlocked with fuel line and manifold, impossible to spill fuel or load-up engine.

———high compression head (8.5 to 1) gives maximum economy and power from high octane L.P. Gas.

———quickly demountable tank takes 3 minutes to change.

———Stellite valves and seats prevent burning from high flame temperature of L.P. Gas.

*4000 lb. capacity, available with standard shift, Hydratork or Dynatork.

Now you can have the advantages of liquified petroleum gas-powered (butane, propane) materials handling, with complete safety. The Clark L.P.G. Carloader is the first lift truck to receive the all-important listing of Underwriters' Laboratories. Field and factory tested for two years, Clark's unit is specifically designed and metered for fork truck operation. For details, call your local Clark dealer, listed under "Trucks, Industrial" in the Yellow Pages. Or send the coupon for specifications.

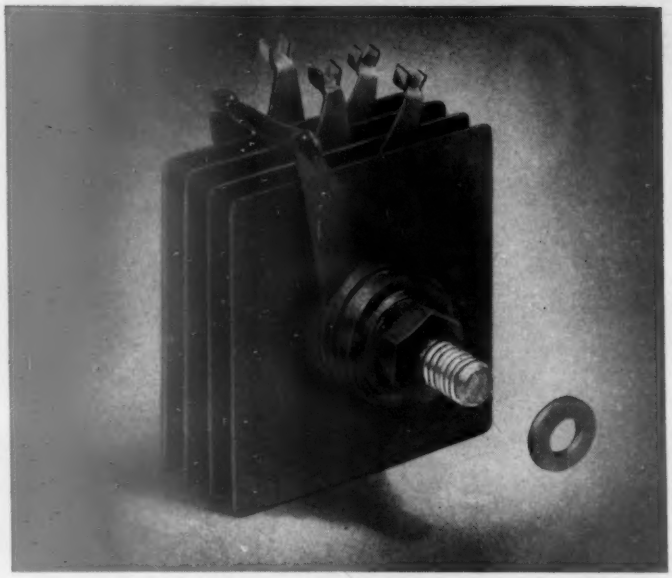
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CLARK EQUIPMENT COMPANY
Battle Creek 23, Michigan

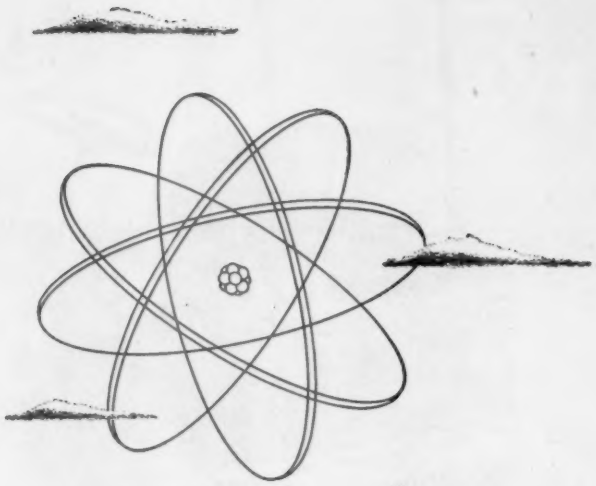
☐ Send details on LPG truck

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Firm_____
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City_____

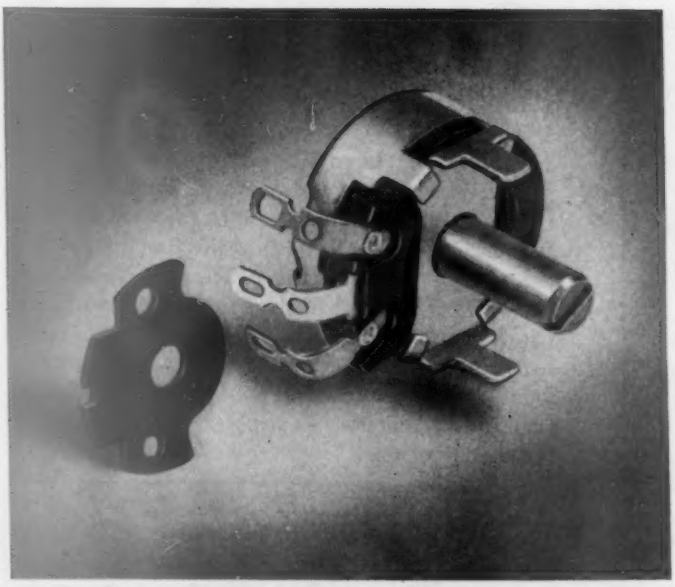
For More Information Circle No. 165 on Inquiry Card—Page 17



DC FROM AC. *In this selenium rectifier for TV use, washers made from Grade 353 give dependable, long-lasting insulation of the current-carrying plates . . . are dimensionally stable . . . provide good mechanical strength at all operating temperatures.*



Progress in electronics— profits by plus

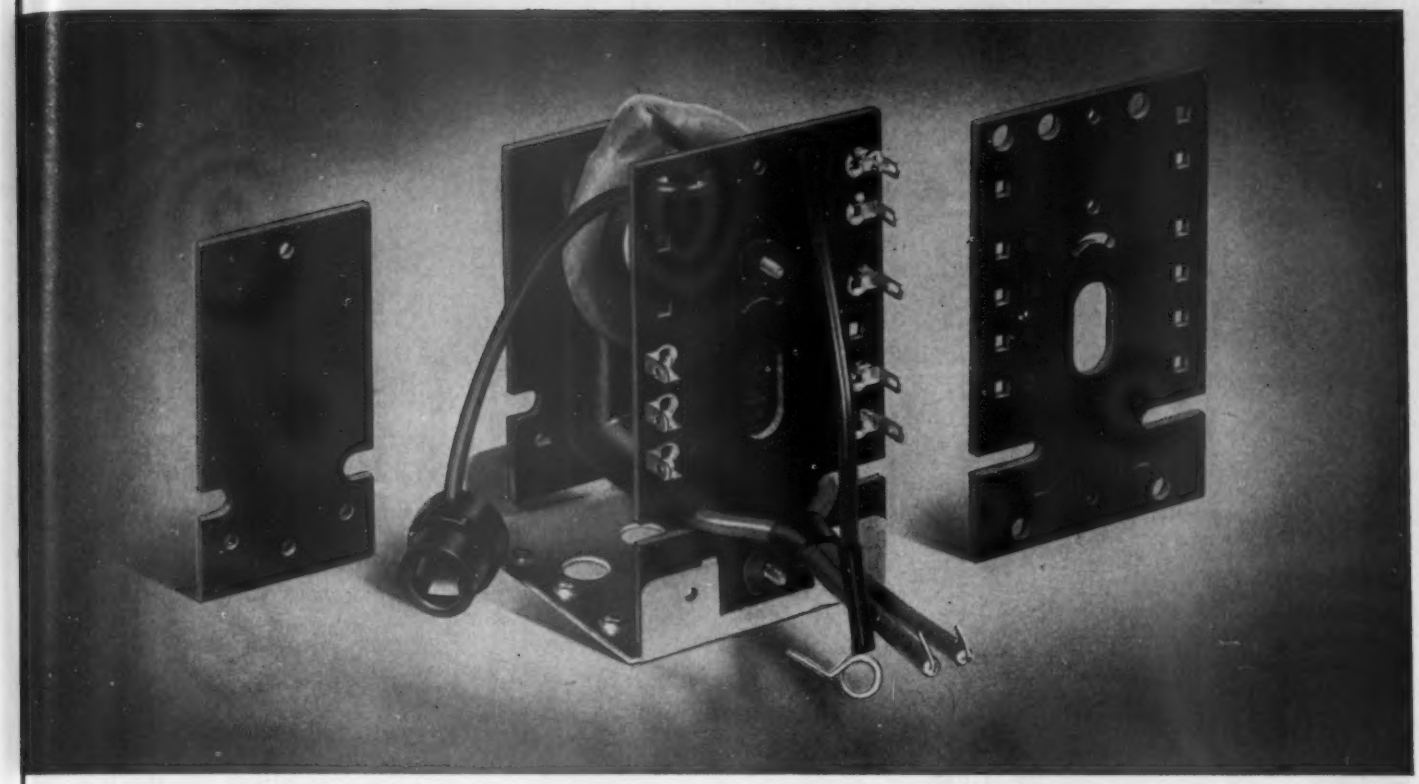


STABLE CONTROL. *The rotor spacer in this volume control, punched from Taylor XXXP-301 laminate, keeps the critical electronic circuit insulated from ground regardless of humidity and high temperatures . . . contributes to stability and long life of the component.*

TECHNOLOGICAL advancement in electronics is proceeding at breath-taking speed . . . demanding new and higher standards for insulating materials. To meet these increasingly stringent requirements, Taylor has developed a revolutionary family of hot-punch laminated plastics that offer *premium properties without premium prices.*

You are invited to investigate these new laminates for applications in products now in the development stage. You'll find their superior combination of electrical, physical and fabricating properties will speed the transition of laboratory ideas into production line realities. Investigate them, too, for use in existing products, as a means of effecting real production savings and performance improvements.

Let us make your punchings for you, in our Fabricated Parts Division . . . equipped to produce to your specifications, at the right price, with deliveries to meet your production schedules . . . **TAYLOR FIBRE CO.**



LIGHT ON THE TV PICTURE. *This flyback transformer for well-known television sets is literally surrounded by the new Taylor laminates. The front panel, which must withstand high voltages, is punched from top quality grade XXXP-301 laminate to assure high insulating properties under humid conditions. The back plate, which has a less demanding electrical job to do but an equally difficult structural responsibility, is punched from economy-priced Grade 354.*

properties of new Taylor laminates

These new Taylor laminates are like nothing you've ever used before. They're uniform all the way through . . . no surface overlay of resin. They offer you insulation resistance, water absorption, power factor and dimensional stability that meet or exceed the tightest specifications . . . plus exceptional ease in punching and staking with no cracking or checking . . . *and Taylor's unique method of manufacture assures these characteristics consistently.* Four different grades were specifically developed to serve the wide range of requirements of the electronics industry.

XXXP-301—Top Grade Laminate—the ultimate in electrical qualities . . . unusually high insulation resistance under all conditions . . . low water absorption . . . excellent punching and staking . . . phenomenal recovery properties . . . premium in every way but price.

XXP-351—a high grade laminate second only to XXXP-301 in quality, with closely comparable characteristics at a lower price.

Grade 353—a quality laminate with outstanding electrical and physical properties, priced for economy.

Grade 354—easily fabricated laminate with good stability, low water absorption . . . at an economical price.

All grades are available in the big, convenient standard Taylor sheet size of 49″ by 49″.

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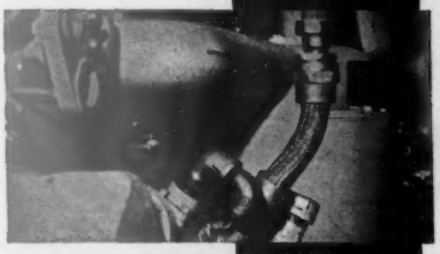
Branch offices in Atlanta; Boston; Chicago; Cleveland; Dayton; Detroit; Indianapolis; Los Angeles; Milwaukee; New York City; Philadelphia; Rochester; San Francisco; St. Louis; and Tolland, Connecticut. Distributors in Grand Prairie and Houston, Texas; Jacksonville, Florida; New Orleans, Louisiana; and Toronto, Ontario.

Plants in Norristown, Pa. and La Verne, Calif.

TAYLOR
Laminated Plastics
Vulcanized Fibre

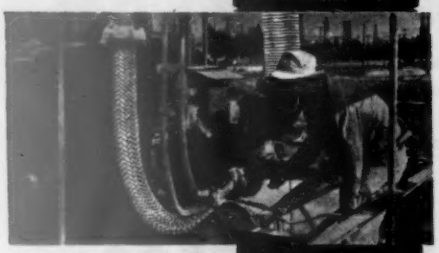
For More Information Circle No. 166 on Inquiry Card—Page 17

YOUR top SOURCE all FOR FLEXIBLE METAL HOSE



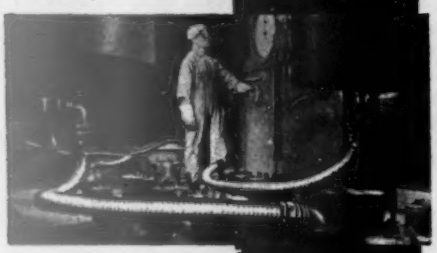
Misalignment and Vibration are easily solved with Atlantic flexible metal hose. Quick delivery insures less idle time for vital equipment.

Misalignment and Vibration



Expansion and Contraction due to intense heat put no strain on piping when flexible metal hose is used as on this Great Lakes Carbon Corp. kiln combustion chamber. Atlantic hose is superior for flexibility and durability.

Expansion and Contraction



Conveying chemicals and gases under pressure and temperature extremes is safe and simple with Atlantic's anti-corrosive, leak-proof hose. It performs long after ordinary hose is scrapped.

Conveying

WRITE FOR CATALOG 500

See our Catalogs in Sweet's Files for Product Designers and Mechanical Industries.

Manufacturers of Seamless and Interlocking Flexible Metal Hose in Steel, Stainless Steel, Monel, Bronze. Sizes ⅛"-36" I.D. with appropriate fittings.

ATLANTIC METAL HOSE CO., INC.

319 Dyckman St., New York 34, N. Y.

For More Information Circle No. 167 on Inquiry Card—Page 17

Solders Aluminum Alloys

A new type solder, trade named AluTin 51, has been developed for production, filling, sealing and repair operations on wrought and cast aluminum alloys. Its core is a liquid flux which, unlike conventional rosin and liquid fluxes, has exceptional wetting properties. Surface tension is reduced and this permits the alloy to spread and flow out wherever the liquid flux has wetted the surface. This accelerated tinning action facilitates bonding and permits high strength, porosity-free deposits to be made. The melting range is between 400 F and 500 F and the alloy has a tensile strength up to 7,000 psi. Any type of heat source may be used. Eutectic Alloys Corp., 40-40 172 St., Flushing, N.Y., make it.

Circle No. 45 on Inquiry Card—Page 17

All-Purpose Steel Bar for Maintenance Use

La Salle Steel Co., 1412-150th Street, Hammond, Ind., announces that its "Stressproof" steel bars are now available through leading steel warehouses. The steel has proved ideal for all-purpose maintenance because it has the strength and wearability to replace practically any alloy or heat treated carbon steel bar. At the same time, it can be easily machined by the maintenance man. Because of a patented process, there is practically no warpage problem with the steel. By stocking a few sizes of this all purpose bar, maintenance departments can keep their bar inventory to a minimum and still handle practically any repair job.

Circle No. 46 on Inquiry Card—Page 17

Volatile Corrosion Inhibitor

Shell Oil Co., 50 W. 50th St., New York 20, N.Y., has developed VPI-250, a volatile corrosion inhibitor which will prevent rust almost immediately. Portions of this crystalline amine nitrate compound volatize very rapidly for immediate rust inhibitive action. Other constituents evaporate more slowly for longer-lasting protection. The compound is a white powder about as fine as talcum, which will not clog a flocking gun and can be easily applied with a squeeze bottle or even a salt shaker. Where spraying or dusting of the compound is impractical, the powder may be dissolved in alcohol and applied in solution.

Circle No. 47 on Inquiry Card—Page 17



UL Listed

The NEW SYNCRO '900' POWER SANDER

Loaded with Outstanding Features . . . Including a Riverside Power Cord!

The new Syncro '900' sander is rugged enough for industrial use—yet priced for the "do-it-yourself" market. It will outperform and outlast virtually any other portable sander, according to Syncro Corp., Oxford, Michigan.

Reflecting the high quality of this U/L-listed tool is the power cord, designed and manufactured by Riverside. It is made of extra finely stranded wire protected by a specially developed natural rubber compound. A molded-on strain relief and grommet prevent kinking and damage in hard use. We also furnish the slide switch illustrated.



Specify Riverside electrical components for *your* product, too! We design and manufacture cords, wiring harnesses and other electrical specialties to fit your requirements . . . deliver them to fit your schedule. Send sample or print for recommendations and quotation without obligation.

Riverside Manufacturing

AND ELECTRICAL SUPPLY COMPANY

10219 Michigan Ave. • Dearborn, Mich. • Phone Tiffany 6-6000

WIRING HARNESSES AND ASSEMBLIES • CORD SETS • HEATER AND EXTENSION CORDS • ELECTRICAL SWITCHES • RELAYS • MOLDED RUBBER PRODUCTS

For More Information Circle No. 168 on Inquiry Card—Page 17

For More Information Circle No. 169 on Inquiry Card—Page 17→



Takes the bugs out of your golf

FOR MANY A WAVERING, unsunk putt, for approaches that head flagwards but fetch up in a trap, blame those insidious enemies of golf—the turf insects that dote on a tasty green or fairway.

Whether you're a golfer yourself, or are concerned with the maintenance of golf courses, you'll be interested to know that a powerful Shell insecticide, aldrin, is deadly to pests that ruin the grass and wreck the accuracy of every golfer's game.

Not only on golf courses, but in parks, private lawns, athletic fields—and vital pasture land, too—aldrin controls turf insects *in the destructive grub stage*. It penetrates soil to curb the larvae of June beetles, Japanese beetles and a host of other "bugs," and at the same time wipes out whole colonies of turf-spoiling ants. Aldrin also gets pests above the ground, like the sap-sucking lawn chinch bug.

Bringing aldrin into play against pests, above and below ground is an example of Shell Chemical's partnership with agriculture and industry. Application of petroleum chemistry to your needs is our constant purpose.

Shell Chemical Corporation

Chemical Partner of Industry and Agriculture

NEW YORK • DENVER • SAN FRANCISCO



"Never mind the 97 rooms and 56 fireplaces. Has it got Campbell Chains on the drawbridge?"

Never take chain for granted. Wherever you use it—for maintenance . . . on the production line . . . or on original equipment, be sure you specify CAMPBELL CHAIN.

Campbell makes safe, dependable chain in sizes and grades to meet every requirement. Each link is inspected individually to guarantee long lasting service. Get complete information from your local distributor or mill supply house. If your chain problem is unusual, write direct.



CAMPBELL CHAIN *Company*

CAMPBELL CHAIN

Main Office, York, Pa. • West Burlington, Iowa
Portland, Oregon • Sacramento, California

Makers of Famous CAMPBELL *Lug-Reinforced* TIRE CHAINS

For More Information Circle No. 170 on Inquiry Card—Page 17

Fire Extinguisher Cart



A rubber-tired bearing cart, known as the Pull-it, has been designed by Ansul Chemical Co., Marinette, Wis., to transport dry chemical extinguishers quickly to a fire. Particularly suitable where fire hazards are dispersed over large areas, the cart can easily maneuver narrow factory aisles. The 30 lb. extinguisher mounted on the unit can be equipped with six feet of rubber hose. This permits operation of the extinguisher from the cart, which is 44″ high, 16″ wide, 13″ deep and weighs 16 lb.

Circle No. 48 on Inquiry Card—Page 17

Cement Mix Cuts Repair Costs

There are now available four cement mixes for repair or maintenance jobs that are already compounded in proper proportions and only need the addition of water to be ready for use. When the mixes are manufactured, 98% of the water is removed before packaging in convenient sized, multi-walled, moisture-proof paper bags. When using, all that is necessary is to add water. Sakrete gravel mix is for repairing sidewalks, floors etc.; Sakrete sand patches stucco or can be used as a topping; Sakrete mortar mix is for laying bricks, etc.; Sakrete Water Tite stops minor leaks in walls, concrete tanks etc. The manufacturer, Harry T. Campbell Sons' Corp., Towson, Baltimore 4, Md., believes this product will be a time and money saver to maintenance men with small cement patching jobs.

Circle No. 49 on Inquiry Card—Page 17

YOU CAN GET MORE INFORMATION ON ANY ITEM SHOWN IN THIS ISSUE. JUST USE THE INQUIRY CARD PAGE 17

For service on the line ...put



STOCKHAM

BRONZE • STEEL • IRON BODY VALVES



on your order...

Full, free flow or precisely controlled flow! High resistance to corrosion, shock, vibration! Less maintenance under severe pressure and temperature conditions! For every requirement, there is a Stockham Valve to fill the bill. Every Stockham Valve is engineered precisely for its intended service—and backed by a name that has meant dependable pipe line service for over 50 years. Write for Valve Catalog 50V; Fitting Catalog 50F.

VALVES: Bronze • Iron Body • Steel Wedgeplug Dry Plug

FITTINGS: Cast Iron Screwed, Flanged Cast Iron Drainage • Malleable Fittings & Unions

STOCKHAM VALVES *and* FITTINGS

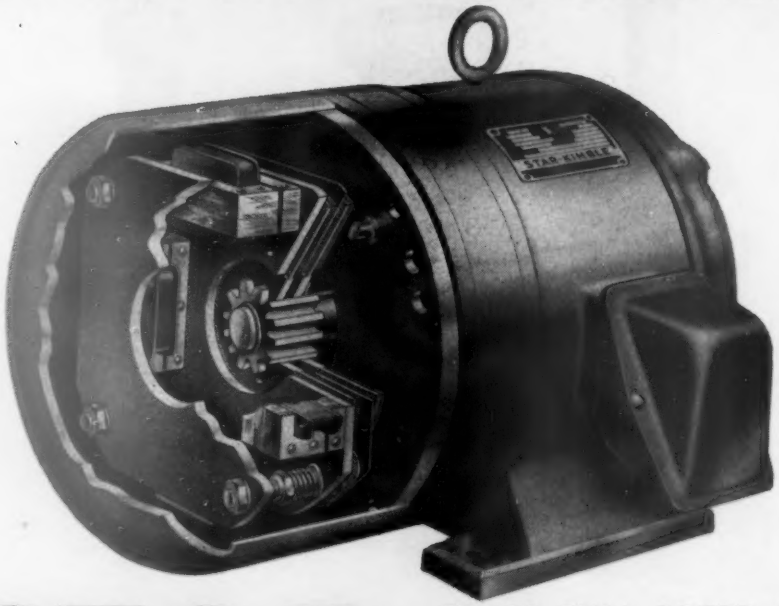
GENERAL OFFICES AND PLANT • BIRMINGHAM 2, ALABAMA

Warehouse Stocks and Sales Services Strategically Located

DISTRIBUTED THROUGH WHOLESALERS

For More Information Circle No. 171 on Inquiry Card—Page 17

START QUICKLY, SMOOTHLY, without BRAKE DRAG!



STOP FROM FULL SPEED IN A SPLIT SECOND!

WITH STAR-KIMBLE BRAKEMOTORS

Time from full speed to standstill can be as short as *one-fifth of a second* with a Star-Kimble Brakemotor — the *extra-large* brakelining area makes possible these *extra-fast* stops of motor and connected load.

Starting of the motor is fast and smooth, too. The small air gap results in instantaneous release of the brake when the motor current is switched on. No brake drag to impede acceleration.

These cycles of split-second stops and smooth starts can be repeated millions of times — that's proved by the experience of user after user of Star-Kimble motors, even in the severest types of service. In reversing service, a Brakemotor can make four times as many starts a minute as a motor which is reversed by plugging.

Every Star-Kimble Brakemotor is an integral, space-saving unit — with motor and brake designed and built together to work together. A single manufacturer — undivided responsibility.

For the full story, write for Bulletin B-501-A

STAR-KIMBLE

MOTOR DIVISION OF

MIEHLE PRINTING PRESS AND MFG CO.

213 Bloomfield Ave. Bloomfield, N. J.

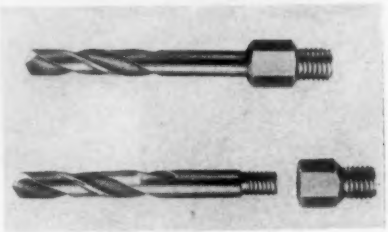
For More Information Circle No. 172 on Inquiry Card—Page 17

Lubricant Extends Gage Service Life

Protective Coatings Inc., Box 3985, Detroit 27, Mich., has developed a lubricant, Micronoil Gage-Lube, which is claimed to extend the service life of gages by 800%. It also eases and smoothes tapping, reaming, broaching, and drilling operations. It can serve as an excellent drawing compound. It permits easier and faster inspection and results in less damage to threads in soft metals. The lubricant is sterilized and causes no allergy in personnel using it. Another advantage is that it inhibits rust on idle gages.

Circle No. 50 on Inquiry Card—Page 17

Drill for Use with Flexible Drive or Extension Arms



A drill for work in narrow and inaccessible places, such as airframe fuselages and other complex metal shapes is in production by National Twist Drill & Tool Co., Rochester, Mich. It is designed for use with flexible drive shafts or extension arms. Previously, an adapter was used with a threaded shank drill; here the two are combined in one unit. This eliminates run out of the drill and difficult removal of drill ends. Space is also saved since the new drill is shorter than the adapter-plus-drill assembly.

Circle No. 51 on Inquiry Card—Page 17

Pressure-Sensitive Aluminum Foil Tape

Minnesota Mining & Mfg. Co., 900 Fauquier St., St. Paul 6, Minn., has developed an aluminum pressure sensitive tape for sealing, splicing, electroplating, conduction and heat reflection jobs. The tape, "Scotch" No. 425, is made with a dead soft aluminum foil backing coated with a high-tack thermosetting type adhesive. Total thickness is 5.25 mils. It has tensile strength of 32 lbs. per inch of tape width, elongation of 15% at breaking point and adhesion of 60 oz. per inch of tape. It is unaffected by extreme humidity conditions.

Circle No. 52 on Inquiry Card—Page 17



Long Distance doesn't cost



it pays

In this era of high overhead and increasing competition, wise purchasing means profit. Missed delivery dates — wrong quantities — short supply — large inventories all cut deeply into profits.

By using Long Distance systematically, you can order materials as they're needed—at the right price—in the right quantity—at the right time.

With Long Distance you can control shipments under way by verbal orders and you can "shop the market" without leaving your desk.

We have a number of specific plans for the profitable use of Long Distance in purchasing. A call to your Bell Telephone Business Office will bring a representative to discuss them with you.

BELL TELEPHONE SYSTEM

LONG DISTANCE RATES ARE LOW

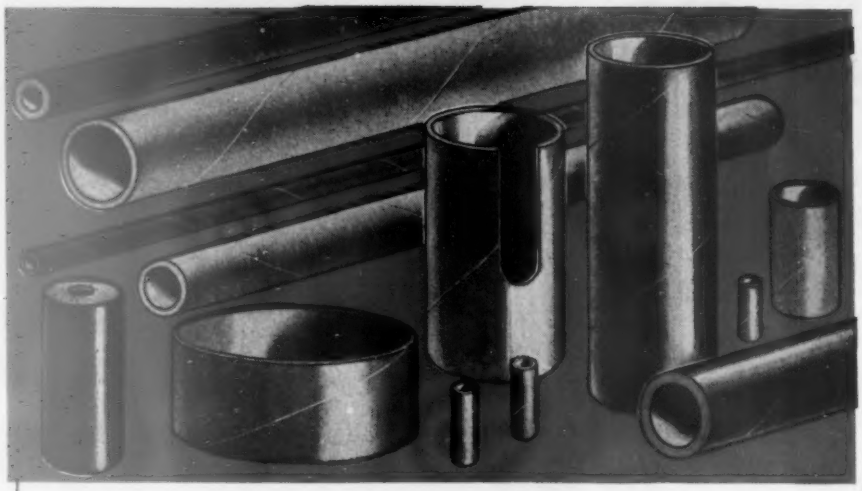
Here are some examples:

Baltimore to Philadelphia	**55¢**
Cleveland to Pittsburgh	**60¢**
Atlanta to Indianapolis	**$1.15**
Chicago to New York	**$1.50**
Los Angeles to Washington	**$2.50**

These are the *daytime* Station-to-Station rates for the first three minutes. They do not include the federal excise tax. Rates are even lower after 6 o'clock every night and all day Sunday.

Save time—Call by Number

For More Information Circle No. 173 on Inquiry Card—Page 17



CLEVELAND
Tubing

We manufacture tubing of every kind, type and size in chipboard, jute or kraft . . . in diameters up to 24″ . . . in lengths and wall thicknesses as desired.

For added protection all such tubes may be wax impregnated or lined with special grease-proof or anti-corrosive papers.

We can print direct on tubes up to 3″ in diameter. Pre-printed papers can be furnished for all tubes regardless of diameter or length.

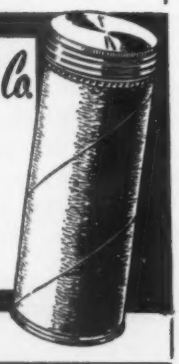
For many ELECTRICAL uses we supply tubes of high grade, chemically pure, dielectric kraft paper, fish paper, cellulose acetate, or other similar films for the component parts of insulators, spacers, coil forms, condensers, capacitors, resistors, etc.

For special electrical grades of laminated phenolic tubing, please send for brochure on "CLEVELITE."®

Why pay more? For Good Quality . . . call Cleveland!

The CLEVELAND CONTAINER Co.
6201 BARBERTON AVE. CLEVELAND 2, OHIO
• All-Fibre Cans • Combination Metal and Paper Cans
• Spirally Wound Tubes and Cores for all Purposes

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Cleveland Container Canada, Ltd.: PLANTS AND SALES OFFICES: Toronto and Prescott, Ont. • SALES OFFICE: Montreal.



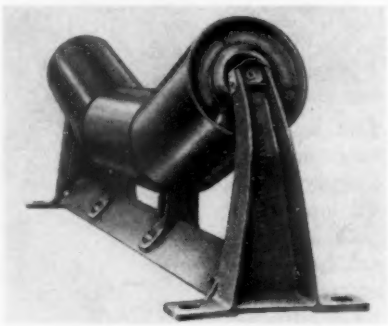
For More Information Circle No. 174 on Inquiry Card—Page 17

Gage Is Accurate on a Few Millionths Inch Change

A unique gage for use on centerless grinders is announced by Niles-Bement-Pond Co. Div., Pratt & Whitney, West Hartford 1, Conn. It consists of a P & W Air-O-Limit snap gage, booster check valve and light signal control unit. The light signal control cabinet includes a standard gaging indicator calibrated to meet requirements, Nullmatic and Kendall regulators along with pressure gages, pneumatic precision relays with electric pressure gages and red and green lights for over and under size indication. The pneumatic precision relays and electric pressure switches reportedly operate on a few millionths of an inch dimensional change with outstanding accuracy and consistency.

Circle No. 53 on Inquiry Card—Page 17

Belt Idlers with Grease Retaining Contact Seals



The Jeffrey Mfg. Co., Columbus, Ohio has on the market its latest MD and HD series of belt idlers. They are claimed to be as nearly perfectly balanced in design as possible. They have dual flexible contact seals which reportedly keep out dirt and retain the grease practically indefinitely. As an added feature, the design permits re-greasing from either end when and if desirable, through the shaft, the grease reservoir and the Neoprene shaft connectors. Tilted ends in the direction of belt travel tend to give the center roll of the troughing idler more control over the belt.

Circle No. 54 on Inquiry Card—Page 17

Want more Facts on any of the products shown in this issue?

Get them quickly and easily by using the INQUIRY CARD PAGE 17



LOOK HOW YOU BENEFIT WITH A SPANG® CW STEEL PIPE SNOW-MELTING SYSTEM!

A snow-melting system for your plant or building is the perfect answer to that annual winter problem of removing snow and ice. It keeps driveways, garage entrances, sidewalks and loading platforms open all year around. And it offers you these benefits:

- high cost of manual or mechanical snow removal eliminated forever
- provides increased convenience for customers and tenants—builds goodwill
- permits more dependable shipping and delivery schedules
- prevents damage to paving from salt or chemicals
- ends accident claims resulting from falls on slippery walks
- eliminates danger of injury through straining or over-exertion from shoveling

And a SPANG CW Steel Pipe Snow Melting System has additional dividends for you. That's because SPANG CW is quality-controlled during its manufacture . . . which makes it easier to cut, bend, thread and weld. It's thoroughly tested and inspected before shipping . . . which assures you of *top-quality* pipe with years of trouble-free service life.

Now—while the weather is warm—is the time to plan and install your snow-melting system. Talk to your heating contractor about it . . . this week. And tell him to specify SPANG CW Steel Pipe. You'll be glad you did.

SPANG-CHALFANT

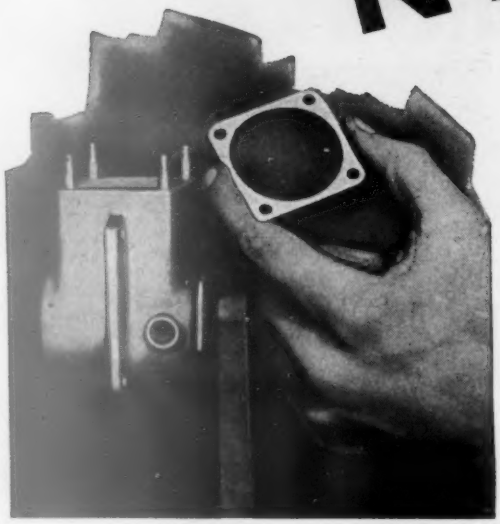
DIVISION OF THE NATIONAL SUPPLY COMPANY

General Sales Office: Two Gateway Center, Pittsburgh, Pennsylvania. District Sales Offices: Atlanta, Boston, Detroit, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, St. Louis.



For More Information Circle No. 175 on Inquiry Card—Page 17

NEW!



Laminated Shims of Aluminum

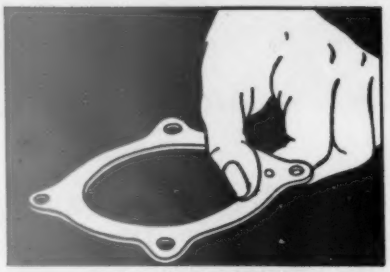
with all laminations surface-bonded

This new type of laminated shim brings you all the advantages of aluminum — light weight, freedom from corrosion and electrolytic action — in shims that P-E-E-L quickly and smoothly for adjustment. They're bonded over their entire surfaces and are made just as carefully and expertly as the brass and steel laminated shims we've been producing for over 40 years.

Laminated aluminum is available either as shims custom-stamped to your blueprint specifications or as laminated sheet stock in thicknesses from .015" to .125", sizes to 20" x 48". Stocks are maintained on both the East and West Coasts.

For free sample of material, further information and prices, please write us direct.

ALUMINUM LAMINATED SHIMS



they look "solid"



yet p-e-e-l for adjustment

SHIM HEADQUARTERS SINCE 1913

LAMINATED SHIM COMPANY, INC.

Send today for our Engineering Data File

2405 UNION STREET · GLENBROOK · CONNECTICUT

CUSTOM SHIMS STAMPINGS SHIM STOCK

For More Information Circle No. 176 on Inquiry Card—Page 17

Hand-Operated Portable Elevators for Lifting Material

One man can load a truck with cases weighing as much as 500 lb by means of a new portable elevator. It is available with a lifting height of as much as 7 feet. It can be used for piling cases, barrels and bales, elevating materials into storage, placing dies in presses or die racks, raising loads to platforms, for overhead maintenance and for work handling. Other models are available with capacities of 1000 and 2000 lb. The hand-operated elevators are manufactured on a production basis and are therefore low-priced. They are sturdy, rugged units, able to take overloads when required and are easily rolled from place to place. Bulletin 5131 giving all data may be had from Barrett-Cravens Co., 4609 S. Western Blvd., Chicago, Ill.

Circle No. 55 on Inquiry Card—Page 17

Magnetic Sockets Save Time

A series of magnetic bit holders and sockets has been designed by the Apex Machine & Tool Co., Dayton, Ohio, to save time on screwdriving and nut running operations. A permanent magnet in the holders and sockets holds the screw or nut firmly in position at all times, expediting work in close quarters and hard-to-reach spots. Magnetic force is great enough to permit working with tool in vertical position without dropping the screw or bolt. Bit holders are available for use with all popular makes of spiral and power drivers and are also offered on hand models.

Circle No. 56 on Inquiry Card—Page 17

Welding Equipment Produces Beads up to 4" in Single Pass

The Lincoln Electric Co., Cleveland, Ohio, has developed a piece of welding equipment called "Spreadarc." It is an attachment that mounts on a standard Lincoln-weld automatic head and oscillates the head back and forth at right angles to the direction of travel. The amount of oscillation can be controlled to produce a pad of weld metal up to 4" in width in a single pass. It may be used to build up a layer of hardsurfacing metals or to build up with mild steel. Under proper conditions it may also be used to overcome poor fit-up conditions encountered in welding a joint. Fluxes normally used with the equipment are "agglomerated" alloy fluxes.

Circle No. 57 on Inquiry Card—Page 17

MEMO

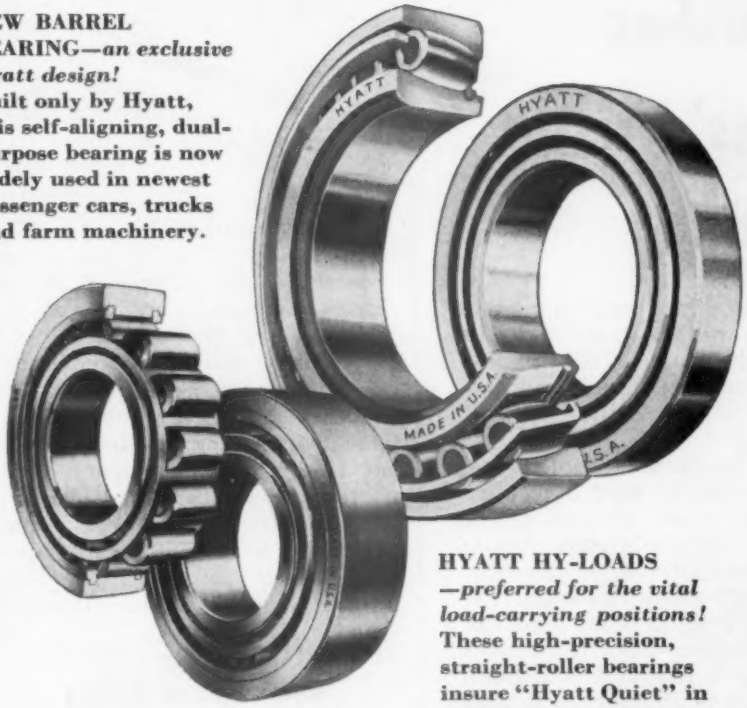
Be sure your replacement bearings are exact duplicates of those installed at the factory—



insist on...

GENUINE HYATTS!

NEW BARREL BEARING—*an exclusive Hyatt design!*
Built only by Hyatt, this self-aligning, dual-purpose bearing is now widely used in newest passenger cars, trucks and farm machinery.





HYATT HY-LOADS
—preferred for the vital load-carrying positions!
These high-precision, straight-roller bearings insure "Hyatt Quiet" in millions of vehicles.



A GENERAL MOTORS PRODUCT — A UNITED MOTORS LINE

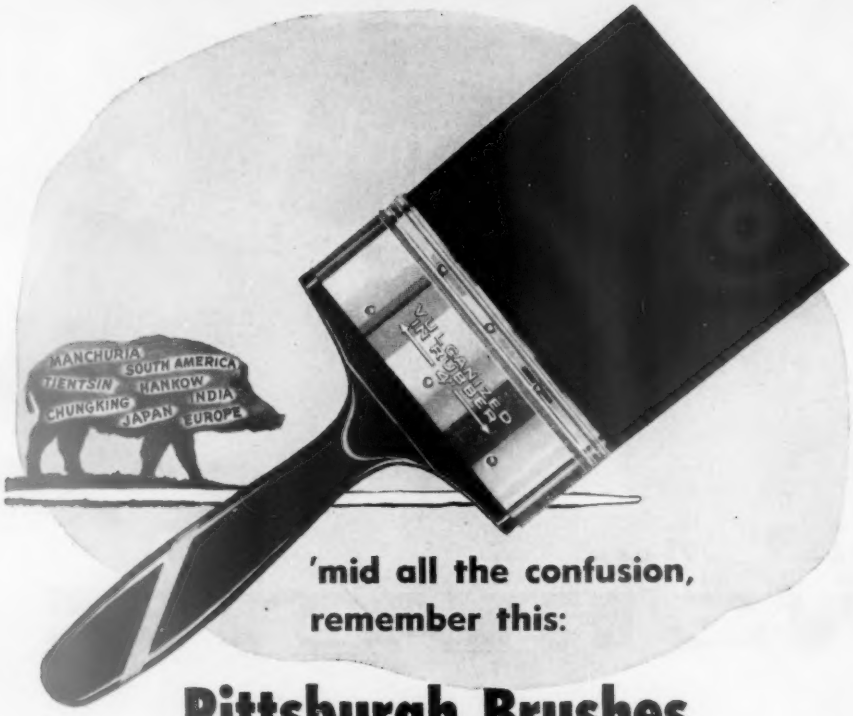
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HYATT

STRAIGHT BARREL TAPER

HYATT BEARINGS DIVISION • GENERAL MOTORS CORPORATION • HARRISON, NEW JERSEY

For More Information Circle No. 177 on Inquiry Card—Page 17



'mid all the confusion, remember this:

Pittsburgh Brushes offer the best hogs' bristle available today!

There's a Pittsburgh brush for every home and industrial use



The phrase "Pure Bristle" stamped on a paint brush doesn't mean a whole lot nowadays. It doesn't tell a thing, for example, about the source of the bristle—and we don't have to tell you how the source affects quality!

What *can* you go on? The Pittsburgh name . . . the Red Stripe label! You can be sure that when you use *Pittsburgh's* pure bristle brushes, you're painting with the best hogs' bristle brushes obtainable today! Pittsburgh's contacts are world-wide, and our buyers are constantly searching for the best bristle possible. Although bristle on today's market is not always good enough for our Gold Stripe label (Gold Stripes in short lengths *are* still available), Pittsburgh buys the best of it and makes it into Red Stripe brushes.

Next time you need paint brushes, make sure you specify *Pittsburgh*. Then you'll know you're getting brushes second to none on the market today! For the address of the Pittsburgh supplier nearest you, write: PITTSBURGH PLATE GLASS CO., *Brush Division,* Dept. M, 3221 Frederick Ave., Baltimore 29, Md.

PITTSBURGH Red Stripe BRUSHES

BRUSHES • PAINTS • GLASS • CHEMICALS • PLASTICS • FIBER GLASS

PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

For More Information Circle No. 178 on Inquiry Card—Page 17

Non-slip Pulley Surfacing

Minnesota Mining & Mfg. Co., 900 Fauquier St., St. Paul 6, Minn., has developed a waterproof, non-slip surfacing with a mineral coating of traprock especially for pulley lagging. Known as Types "E" and "F", the surfacing is a thin tough fabric adapted for use on any type of industrial pulley. It can be spirally wound or applied in sections. Both types are identical except that type "E" requires a separate adhesive to apply while type "F" has its own built-in pressure-sensitive backing. The nature of traprock backing is such that it avoids any harsh abrasive action on belts or belt lacings; yet it still provides required traction.

Circle No. 58 on Inquiry Card—Page 17

Toolholder, "Throw Away" Blanks Cut Out Grinding



A new combination of carbide tooling is said by its developers, Vascoloy-Ramet Corp., Waukegan, Ill., to eliminate completely all carbide grinding. The combination consists of new toolholders and throw-away carbide blanks. The toolholder is designed with a "built-in" carbide chipbreaker which eliminates all chipbreaker grinding. The "throw-away" blanks, available to fit all styles of triangular, square and round toolholders, are designed to be used on all cutting edges without grinding and then be thrown away.

Circle No. 59 on Inquiry Card—Page 17

New Storage Battery

The Edison Storage Battery Div., Thomas A. Edison, Inc., West Orange, N. J., says that a new type of storage battery supplies more capacity relative to its size than any nickel-iron-alkaline storage battery heretofore produced by the company. It has been developed for use in electric industrial trucks in which space available for the battery is limited. Designated as the MC-type, it supplies such trucks with as much as 25% more capacity than other Edison batteries. This is done without changing steering wheel or pedal heights and without increasing either the length or width of the battery boxes.

Circle No. 60 on Inquiry Card—Page 17

For More Information Circle No. 179 on Inquiry Card—Page 17→

"You mean to tell me it's better to put all my eggs in one basket?"



There's no doubt about it when you consider:

1. Electrical supply purchases pages 2-3
2. Engineered installations pages 4-5

"It cuts your buying costs . . . because we can streamline all your electrical supply purchases."



There's one call to make . . .

to fill your immediate needs. You save time on calls. And you save the expense of corresponding with two suppliers when you rely on Westinghouse to match motor and control characteristics.

One man to rely on . . .

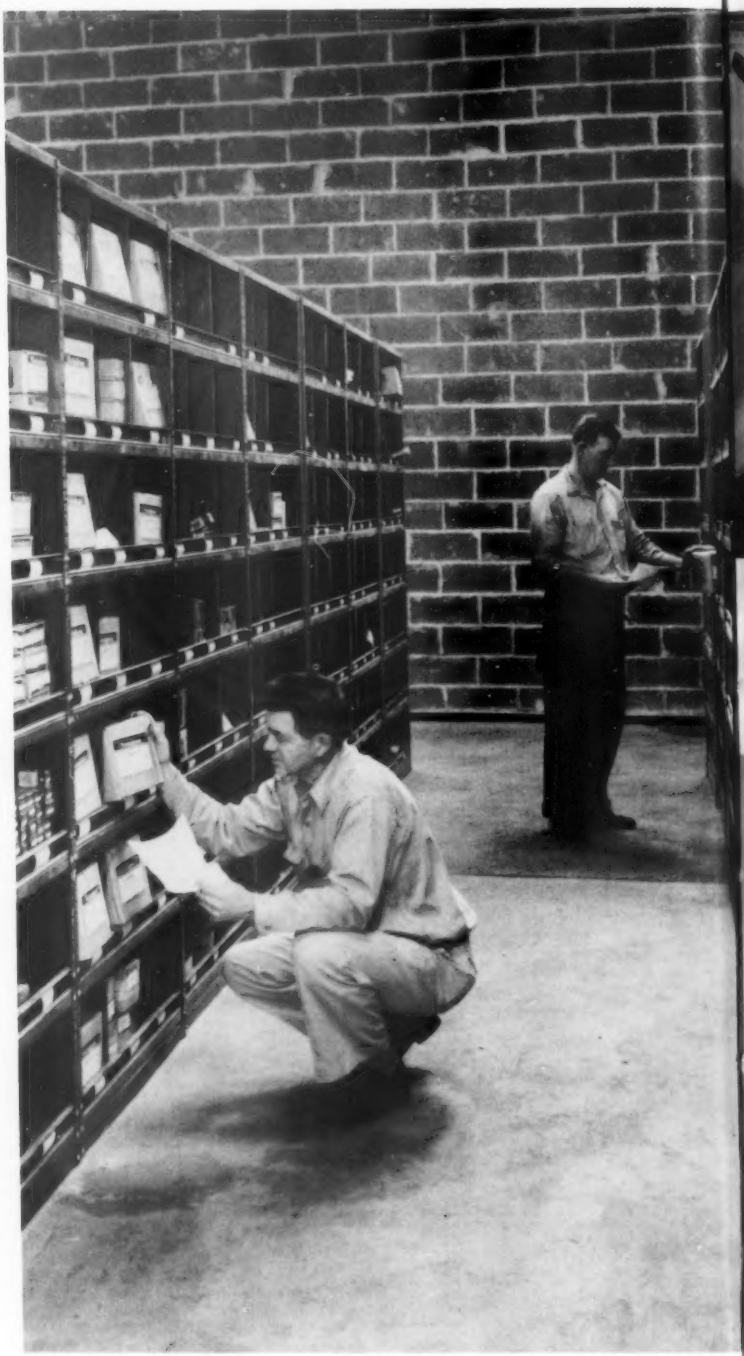
the local Westinghouse representative handles all the necessary engineering and coordinating of information. For example, with a motor and control purchase, you are assured apparatus that is accurately paired for production.

One order to process . . .

one order specifying the type of motor and control desired is all you prepare. Life-Line® motors and controls are selected and matched by Westinghouse on the basis of your one order for both motors and controls.

One delivery to provide everything . . .

your motors and controls arrive together. Quick deliveries of standard Life-Line motors and controls are made from any one of 79 Westinghouse distribution points across the country. This network of supply warehouses simplifies your spare parts inventory, too.



YOU CAN BE **SURE**...IF IT'S

And Westinghouse offers the right combination of top-quality apparatus



NEW PACKAGING PLAN

Enclosures and breakers are now being packed and stocked as two separate items. This new packaging plan enables Westinghouse to offer you a complete line of AB-I Enclosed Circuit Breakers quickly, right from the shelf. You are assured of fast delivery to meet critical job dates.





The new Life-Line "A" motor is a proved Life-Line. New 4-way seal, pre-lubricated bearings eliminate greasing headaches—lower maintenance costs. Longer motor life is assured through new fortified insulation. And new drip-proof protection—in all positions—means greater application flexibility.

The new Life-Line Starter is the most advanced control design of its type. You just install 'em and forget 'em—thanks to Life-Line's rugged, reliable, knife-edge bearing design. Life-Line Starters give instant, positive motor protection. And their advanced design adds up to longer life, faster installation and simplified maintenance. And they're available in uniform designs from NEMA Sizes #0 through #4.

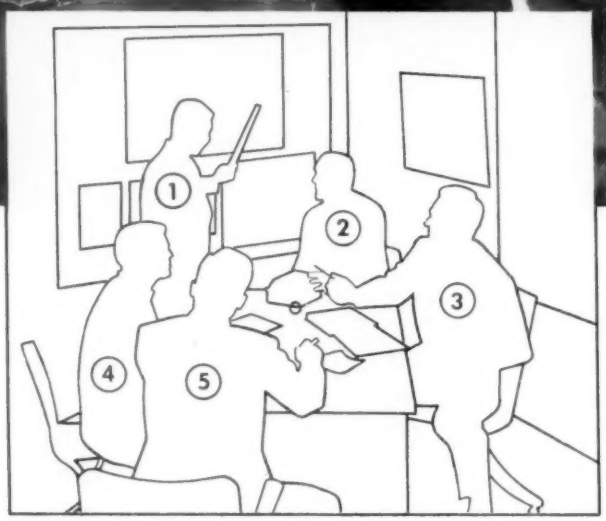
"Westinghouse can ship you the complete order at *once*!"



Westinghouse

"Technical assistance is yours





1. Westinghouse Sales Engineer
2. Purchasing Agent
3. Chief Engineer
4. Electrical Engineer
5. Production Superintendent

YOU CAN BE **SURE**...IF IT'S

because Westinghouse engineering and application service is local."

Becomes your working partner

Westinghouse engineers are trained, both product and industry-wise. They become working partners of your engineering and manufacturing personnel, consulting engineers, contractors and other equipment suppliers. Your problems of apparatus become the responsibility of *one* co-ordinated team.

Co-ordinates detailed planning

The experienced Westinghouse engineers who co-ordinate the electrical equipment necessary for your new project specialize in *your* industry. They are thoroughly familiar with the apparatus involved and know how to apply it. As a result, your engineers have more time to devote to the broad aspects of the over-all project.

Simplifies your ordering problem

Costly paper work becomes almost negligible because you place only *one* purchase order. The problems of following-up and co-ordinating the production and shipping schedules of many pieces of varied apparatus is entirely handled by Westinghouse.

Gets the job done faster

Because Westinghouse co-ordinates all production, work is started immediately on many of the items involved. There's no tie-up of the entire project to settle last-minute details. Construction can proceed at top speed because shipments of the individual components are co-ordinated to arrive on the job at the right time and in the right sequence.

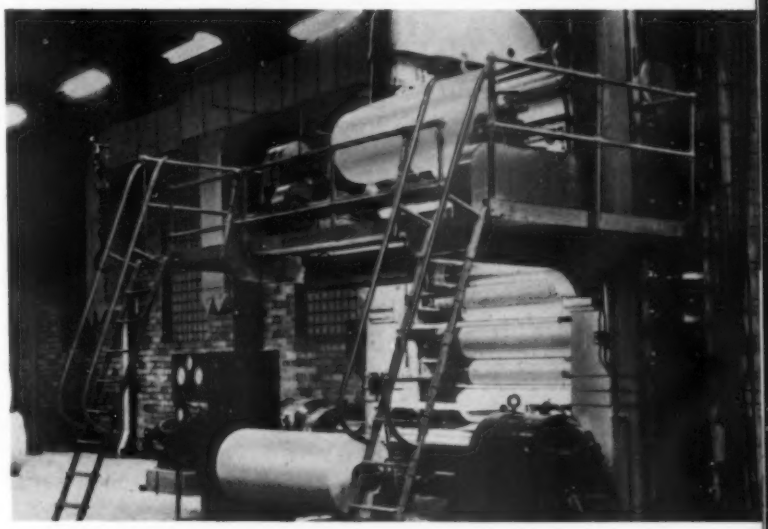
Follows through to actual performance

A Westinghouse engineering and service specialist is available to supervise the installation of the equipment as it arrives on the job. He relieves you of "start-up" worries and checks the performance of all components after the project is in operation.

Westinghouse



This pipeline operator turned to Westinghouse to co-ordinate a complete electrical system to meet his particular set of conditions . . . a system that starts, stops and regulates a highly complex series of operations . . . automatically and fast. One order handled the entire job.



This paper manufacturer called on Westinghouse to work with his engineers in designing a completely modernized drive. Just one purchase order started the ball rolling. Now the drive practically runs itself. As a result, this paper manufacturer now realizes savings up to $25,000 per year.



"Ordering time is minimized . . .

because we are equipped to handle your problems faster!"



Complete problem solving assistance is available to you locally . . .

A complete staff of Westinghouse engineers is ready to help you work out your particular application problems. And product design engineers at Westinghouse plants are always available to study your special problems from the standpoint of application, production needs, flexibility and economical operation.

The right product combinations . . .

Many manufacturers make good electrical equipment. Westinghouse, in fact, makes a broader line than anyone else. But the priceless ingredient Westinghouse offers you, in addition, is the skill of broadly experienced engineers in putting together the right combination of top-quality apparatus.

Unified responsibility . . .

Your problems of apparatus and its application become the responsibility of *one* co-ordinated team. Westinghouse handles all details of co-ordinating engineering, production and shipment.

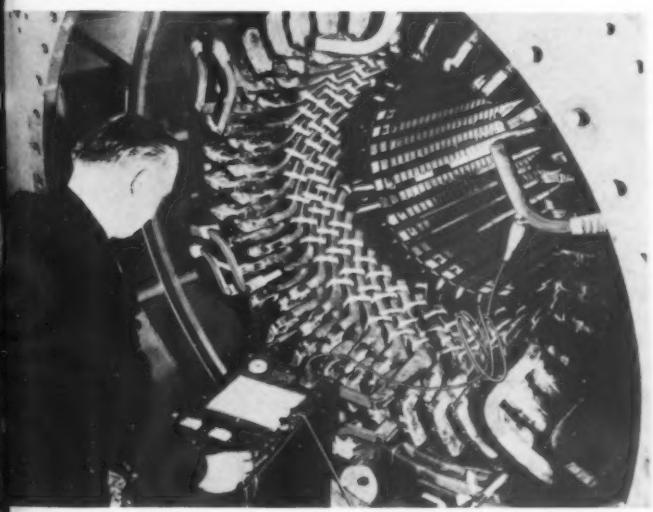
Dependable availability . . .

Modern manufacturing facilities, plus 79 major Westinghouse distribution points across the country, assure you of a steady and dependable source of supply.

YOU CAN BE **SURE**...IF IT'S

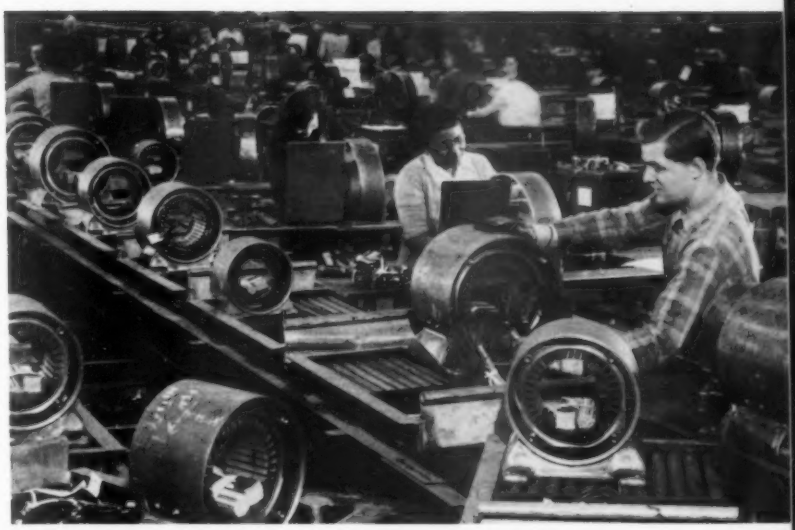


Engineering laboratories conduct extensive life testing on all types of equipment to maintain high standards of dependable product performance.

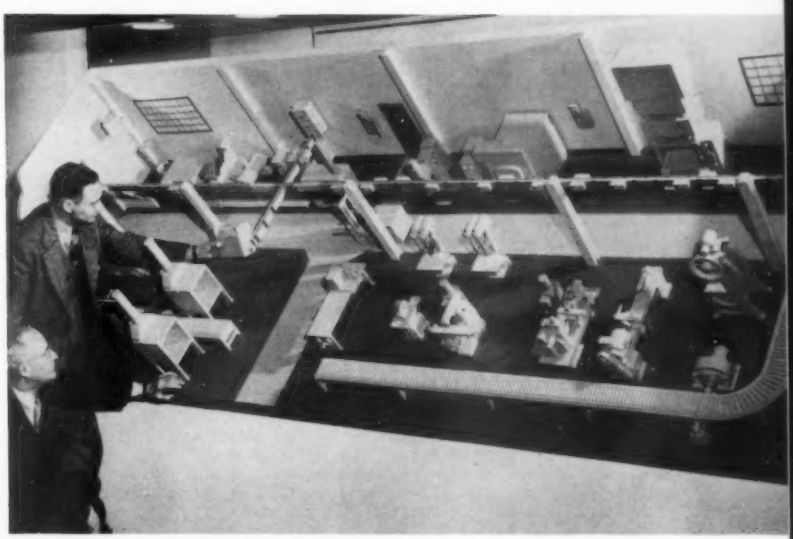


Field service engineers reach your plant in minimum time. Their wide experience is invaluable in diagnosing and taking the "bugs" out of your operation quickly.





Manufacturing produces an ever-better product. Skilled workmen, quality materials and modern machines combine to produce the products developed by research and engineering.



Application engineering fits the equipment to the job—aids you in matching the correct product for your specific conditions.

Warehouses—a network of 79 across the country—maintain 24-hour service on standard product items. Quick renewal parts delivery is always available.

Westinghouse

"Yes, the best place for all of your eggs is in one *strong* basket—when you consider . . .

1. Electrical supply purchases

2. Engineered installations

You start saving when you make one call to me, your Westinghouse Sales Engineer."



HERE'S WHERE TO CALL

Akron 8, Ohio	JEfferson 3165	Denver 2, Colo.	KEystone 8121	Los Angeles 17, Cal.	MAdison 6-3881	Sacramento 14, Cal.	GIlbert 3-6525
Albany 5, N. Y.	8-7801	Des Moines 8, Iowa	2-0244	Louisville 2, Ky.	CLay 0212	Saginaw, Mich.	4-2640
Albuquerque, N. M.	3-1826	Detroit 31, Mich.	TRinity 2-7010	Madison 3, Wis.	5-4868	St. Louis 1, Mo.	CEntral 1120
Allentown, Pa.	HEmlock 4-5108	Duluth 2, Minn.	7-1541	Medford, Ore.	2-8289	Salt Lake City 1, Utah	5-3413
Amarillo, Texas	6-7838	El Paso, Tex.	2-5691	Memphis 3, Tenn.	8-8546	San Antonio 5, Tex.	GArfield 5114
Appleton, Wis.	4-4116	Emeryville 8, Cal.	OLympic 2-3770	Miami 4, Fla.	2-1553	San Diego 1, Cal.	MAin 8151
Atlanta 2, Ga.	ATwood 1642	Erie, Pa.	24-867	Milwaukee 2, Wis.	DAly 8-1800	San Francisco 8, Cal.	EXbrook 2-5353
Augusta, Maine	3-4571	Evansville 8, Ind.	5-7146	Minneapolis 13, Minn.	GRanville 3545	Seattle 4, Wash.	MAin 0808
Baltimore 2, Md.	PLaza 0300	Fairmont, W. Va.	501	Mobile, Ala.	8-5443	Shreveport, La.	4-5298
Beaumont, Tex.	4-1481	Fergus Falls, Minn.	4250	Nashville 3, Tenn.	42-3505	Sioux City 4, Iowa	5-7634
Binghamton 62, N. Y.	2-6403	Fort Wayne 2, Ind.	ANthony 3421	Newark 2, N. J.	MArket 2-0200	South Bend 4, Ind.	3-7167
Birmingham 3, Ala.	53-2411	Fort Worth 2, Tex.	FOrtune 4086	New Haven 10, Conn.	5-3191	Spokane 8, Wash.	MAin 3294
Bluefield, W. Va.	3-9131	Fresno 1, Cal.	4-5097	New Orleans 13, La.	RAymond 8656	Springfield, Ill.	3-1532
Boston 10, Mass.	LIberty 2-0600	Gary, Ind.	2-1468	New York 5, N. Y.	WHitehall 3-4321	Syracuse 4, N. Y.	2-1361
Bridgeport 8, Conn.	4-0151	Grand Rapids 2, Mich.	9-3106	Niagara Falls, N. Y.	9700	Tacoma 2, Wash.	BRoadway 6565
Buffalo 3, N. Y.	WAshington 3966	Greensboro, N. C.	2-3415	Norfolk 10, Va.	5-1639	Tampa 1, Fla.	2-7246
Butte, Mont.	2-2301	Greenville, S. C.	3-7755	Oklahoma City 2, Okla.	REgent 6-1633	Toledo 4, Ohio	GArfield 4625
Canton 2, Ohio	3-9171	Hammond, Ind.	RUssell 8937	Omaha 2, Nebr.	HArney 8700	Trenton 10, N. J.	2-4136
Cedar Rapids, Ia.	7638	Hartford 3, Conn.	5-0851	Peoria 3, Ill.	2-5439	Tulsa 3, Okla.	3-3191
Charleston, S. C.	9904	Houston 2, Tex.	CHarter 4691	Philadelphia 4, Pa.	EVergreen 2-1200	Utica 1, N. Y.	4-1194
Charleston 1, W. Va.	37-565	Huntington 1, W. Va.	7146	Phoenix, Ariz.	4-3158	Walla Walla, Wash.	5124
Charlotte 1, N. C.	5-3731	Indianapolis 9, Ind.	MArket 3301	Pittsburgh 30, Pa.	ATlantic 1-8400	Washington 6, D.C.	NAtional 8-8843
Chattanooga 2, Tenn.	7-4361	Jackson, Mich.	2-0519	Portland 4, Ore.	CApitol 1-9151	Waterloo, Iowa	4679
Chicago 54, Ill.	WHitehall 4-3860	Jackson, Miss.	6-4839	Providence 3, R. I.	GAspee 1-0818	Watertown, N. Y.	1400
Cincinnati 2, Ohio	GArfield 2250	Jacksonville 6, Fla.	78-6492	Raleigh, N. C.	6302	Wheeling, W. Va.	6222-6223
Cleveland 13, Ohio	CHerry 1-7600	Jamestown, N. Y.	8939	Reading, Pa.	2-0287	Wichita 2, Kansas	5-2631
Columbia, S. C.	3-8823	Johnstown, Pa.	81-257	Richmond 19, Va.	2-4758	Wilkes-Barre, Pa.	3-1144
Columbus 15, Ohio	MAin 5527	Kansas City 6, Mo.	HArrison 7122	Roanoke 4, Va.	6263	Williamsport, Pa.	4289
Corpus Christi, Tex.	3-9237	Kingsport, Tenn.	3769	Rochester 7, N. Y.	MOnroe 1635	Worcester 8, Mass.	4-2648
Dallas 1, Texas	RIverside 5231	Knoxville 8, Tenn.	2-8101	Rockford, Ill.	2-3452	York, Pa.	7851
Davenport, Iowa	3-2761	Little Rock, Ark.	4-0367	Rutland, Vt.	3292	Youngstown 3, Ohio	4-1118
Dayton 2, Ohio	ADams 9153						

YOU CAN BE SURE...IF IT'S

Westinghouse

MP-3001

Immediate delivery from stock!



When buying gauges ask for USG . . . where a most diversified stock awaits your selection. USG Gauges are stocked for your convenience. You can order any of a wide variety of instruments—233 types, dial sizes, and size ranges—without delay. Many of these gauges are obtainable immediately from the local stock of distributors of USG Gauges in principal cities throughout the United States. Or they may be ordered through your USG distributor directly from factory stock at Sellersville, Pa. Take advantage of this fast delivery service. Call the distributor of USG Gauges in your locality today for information on gauges. United States Gauge, Division of American Machine and Metals, Inc., Sellersville, Pa.

Three of the many types and sizes of USG Quality Gauges now carried in stock

USG
UNITED STATES GAUGE

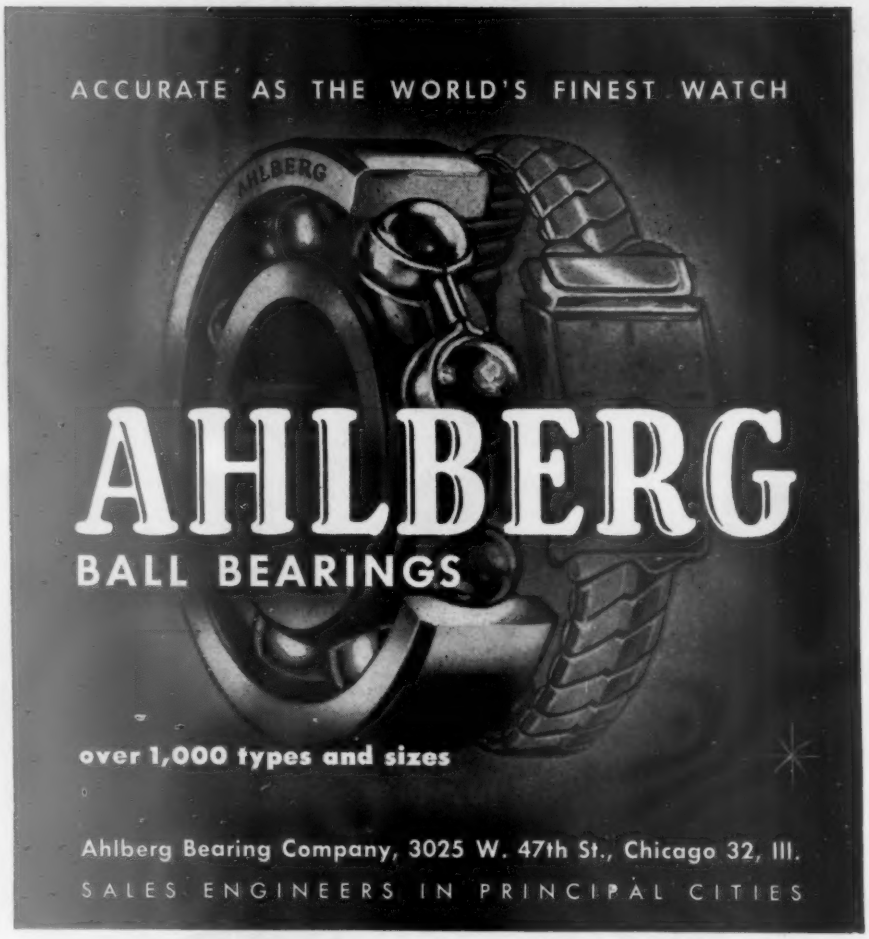
Quality Gauges Engineered for Enduring Accuracy

PRODUCTS OF UNITED STATES GAUGE... Absolute Pressure Gauges • Aircraft Instruments • Air Volume Controls • Altitude Gauges • Boiler Gauges Chemical Gauges • Mercury, Gas, and Vapor Dial Thermometers • Glass Tube and Industrial Thermometers • Flow Meters • Inspectors' Test Gauges Precision Laboratory Test Gauges • Marine, Ship and Air-Brake Gauges • Voltmeters • Ammeters • Welding Gauges.

OTHER DIVISIONS OF AMERICAN MACHINE AND METALS, INC. AT SELLERSVILLE, PA.: GOTHAM INSTRUMENTS, AND AUTOBAR SYSTEMS

For More Information Circle No. 180 on Inquiry Card—Page 17

ACCURATE AS THE WORLD'S FINEST WATCH



AHLBERG
BALL BEARINGS

over 1,000 types and sizes

Ahlberg Bearing Company, 3025 W. 47th St., Chicago 32, Ill.
SALES ENGINEERS IN PRINCIPAL CITIES

For More Information Circle No. 181 on Inquiry Card—Page 17

NEW— FAST—SAFE—ECONOMICAL
INLAND
SEAL-LESS STRAPPING



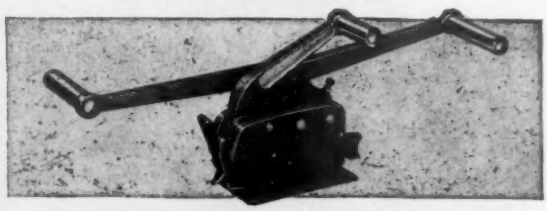
Inland Seal-less Strapping is the new trend that offers many advantages over the conventional strapping methods. You have only the strapping itself to work with — no seals — no time or cost of applying seals. The application of Seal-less Strapping is accomplished with a compact, easy-to-operate machine. A simple operation tensions the strapping and mechanically interlocks the two ends so the joint will test from 77% to 86% of the strength of the strapping itself. Seal-less Strapping has, in many cases, permitted the use of lighter and less costly packing materials at an added saving.

INLAND
Complete Packaging Service

—includes round steel strapping and machines, stitchless wire and machines, bale ties, tag fasteners, etc.

Write for literature on this cost reducing method without obligation.

A few select territories still open—
Inquire, giving qualifications



INLAND WIRE PRODUCTS CO.
3942 South Lowe Avenue Chicago 9, Illinois
Branch Offices and Warehouses
Oakland, Calif. *Los Angeles, Calif.*

For More Information Circle No. 182 on Inquiry Card—Page 17

Tapping Screws Have Two Balanced Cutting Edges

The Continental Screw Co., New Bedford, Mass., announces three types of thread cutting screws with many advantages over conventional type cutting screws. Two balanced cutting edges result in less driving torque being required than with any other thread cutting screw. Solid connection gives a stronger tip to permit wider flutes for increased chip room. Made of alloy steel and heat treated, they have twice the strength of ordinary machine screws. The close thread fit from the two flutes resists backward rotation and vibration. Three screw types are listed: G2 for use in steels; G3 for soft metals; H3 for low driving torque.

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Time Switch Cuts Air Conditioning Cost

A time switch, Series No. 3700, has been designed by Paragon Electric Co., Two Rivers, Wis., to provide automatic control for all makes of window conditioners. It turns on the air conditioner before business hours and turns it off after hours. The seven-day dial allows for different settings each day as well as Sunday and holiday cutout. The switch can also be manually operated without disturbing the sequence of automatic operations. It stops unnecessary air conditioner operation and saves real money on week ends and holidays. Two simple dials which can be readjusted at any time, control the ON-OFF schedule.

Circle No. 62 on Inquiry Card—Page 17

Electric Signal Light Warns in Difficult Spots

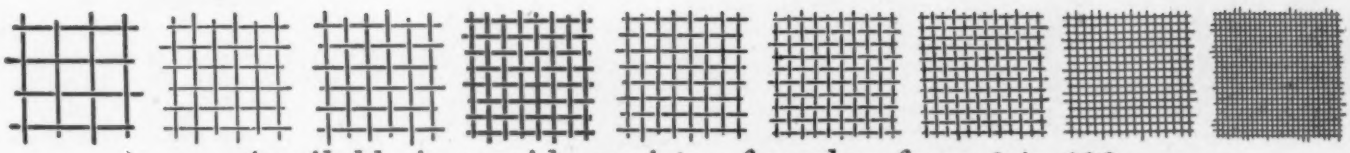
An industrial warning light has been developed as a safety communications aid by Federal Sign & Signal Corp., 8700 S. State St., Chicago 19, Ill. It is modelled after the revolving red flashing light used universally on fire, police and other emergency vehicles. The beacon revolves horizontally in a 360° arc, producing 100 brilliant flashes per minute. It can be used as a warning device in industry to indicate hazardous work areas, or as a visual communication light in noisy shops. It is available with green, blue, amber and clear lenses. A red lens is also provided for use in locations not in conflict with other red warning or emergency lights.

Circle No. 63 on Inquiry Card—Page 17



This is one greatly magnified opening...

This opening of Chase Industrial Wire Cloth is magnified to show you that the mesh is completely square. So is every *other* opening in the mesh. Why the exactness? Because no wire cloth can do its best job unless its openings have—and *hold*—the same exact dimensions. That is why *each and every wire* in Chase wire cloth is *double*-crimped. Next time, insist on Chase Brass and Copper Industrial Wire Cloth.



Available in a wide variety of meshes from 2 to 100.

Chase ®

BRASS & COPPER CO.

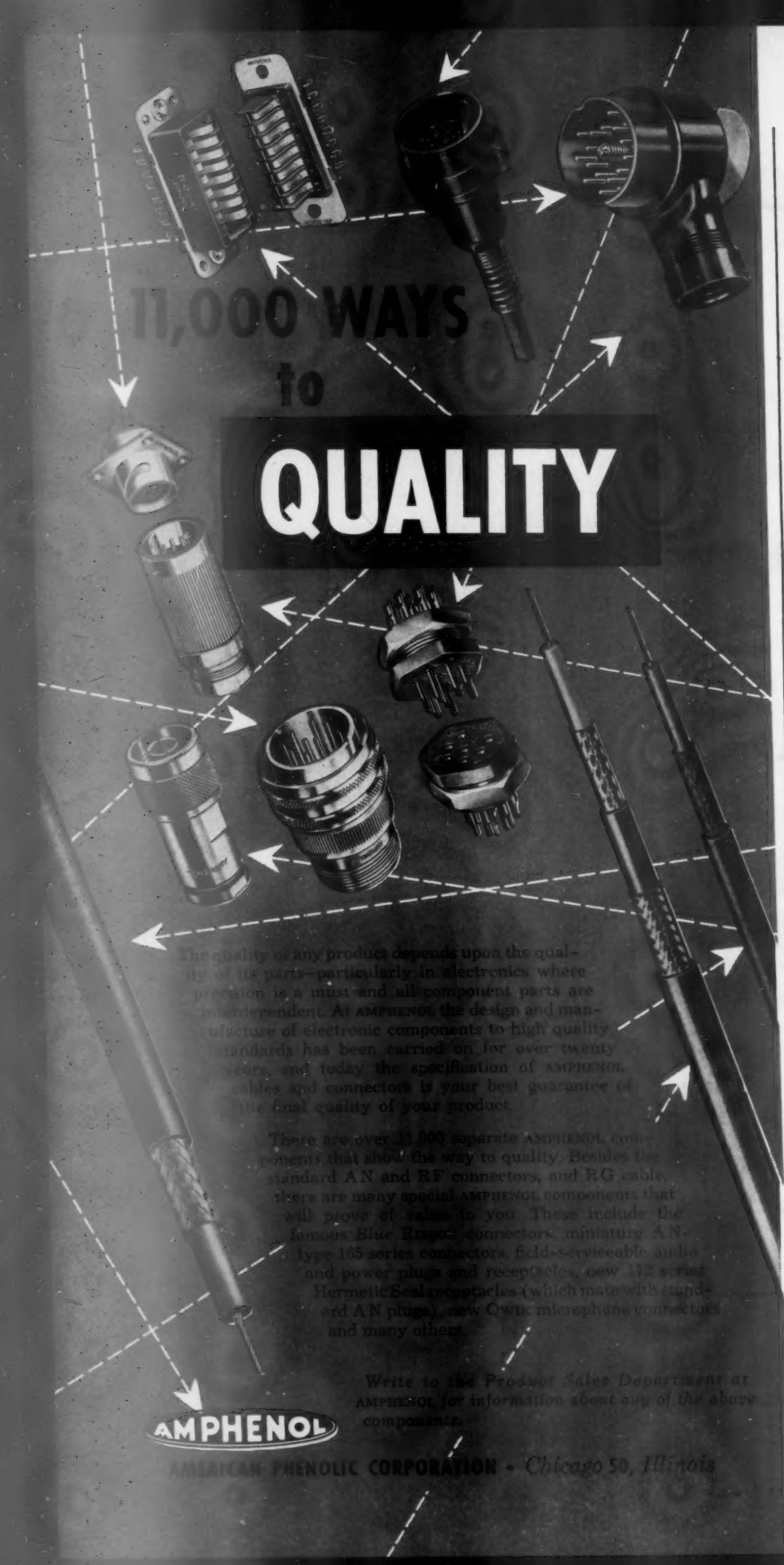
WATERBURY 20, CONNECTICUT • SUBSIDIARY OF KENNECOTT COPPER CORPORATION

NEW PRIZE-WINNING MOVIE—*"The Science of Making Brass."* Available for free showing in your plant or office, or to industry groups. Call nearest Chase warehouse or write us.

The Nation's Headquarters for Brass & Copper

Albany†	Chicago	Denver†	Kansas City, Mo.	Newark	Pittsburgh	San Francisco
Atlanta	Cincinnati	Detroit	Los Angeles	New Orleans	Providence	Seattle
Baltimore	Cleveland	Houston	Milwaukee	New York	Rochester†	Waterbury
Boston	Dallas	Indianapolis	Minneapolis	Philadelphia	St. Louis	(†sales office only)

For More Information Circle No. 183 on Inquiry Card—Page 17



The quality of any product depends upon the quality of its parts—particularly in electronics where precision is a must and all component parts are interdependent. At AMPHENOL the design and manufacture of electronic components to high quality standards has been carried on for over twenty years, and today the specification of AMPHENOL cables and connectors is your best guarantee of the final quality of your product.

There are over 11,000 separate AMPHENOL components that show the way to quality. Besides the standard AN and RF connectors, and RG cable, there are many special AMPHENOL components that will prove of value to you. These include the famous Blue Ensign connectors, miniature AN-type 165 series connectors, field-serviceable audio and power plugs and receptacles, new 172 series Hermetic Seal receptacles (which mate with standard AN plugs), new Qwic microphone connectors and many others.

Write to the Product Sales Department at AMPHENOL *for information about any of the above components.*

AMPHENOL

AMERICAN PHENOLIC CORPORATION • *Chicago 50, Illinois*

Fork Truck Attachments Aid Materials Handling



Clark Equipment Co., Battle Creek, Mich., announces an improved design for its "Pul-Pac" and "Pusher" units. The Pul-Pac is a combination push-pull attachment that permits the use of a thin carrying sheet instead of the conventional type wooden pallet. The Pusher device, which does not have a gripper jaw on the rack, eliminates manual unloading of cartons, bags, drums or other material stored on pallets. Both devices are available for factory or field installation on the company's gas and electric Clippers and Carloader model fork trucks. An important development is the ability to handle off-center loads.

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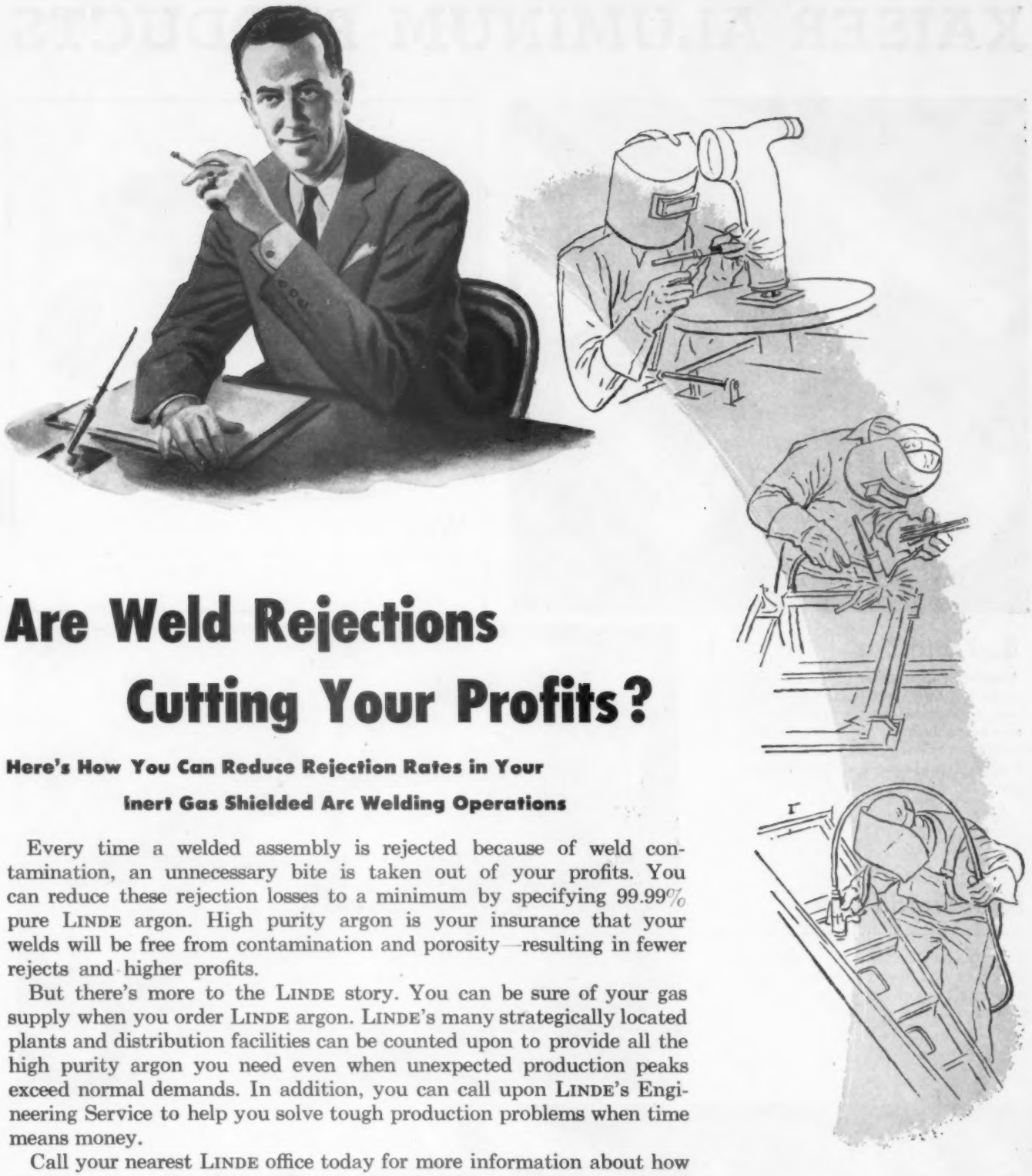
Motors Are Designed For Cool Operation

The series 100 re-rated polyphase a-c motors, made by the Howell Electric Motors Co., Howell, Mich., have nearly 50% more contact area between cooling air and active materials to assure maximum ventilation. The motors are built to new NEMA frame-size to hp standards. In some models, hp is actually double that formerly available in frames of the same size. Motors currently offered in the new line are (1) open, drip-proof, and (2) totally enclosed, fan-cooled types. They are both available in 182 and 184 frame sizes, rated at 1, 1½ and 2 hp at 1800 rpm; 2 and 3 hp at 3600 rpm; and ¾, 1, 1½ hp at 1200 rpm.

Circle No. 65 on Inquiry Card—Page 17

QUICK—CONVENIENT
Use the Inquiry Card on Page 17 for additional information on any product

←For More Information Circle No. 184 on Inquiry Card—Page 17



Are Weld Rejections Cutting Your Profits?

Here's How You Can Reduce Rejection Rates in Your Inert Gas Shielded Arc Welding Operations

Every time a welded assembly is rejected because of weld contamination, an unnecessary bite is taken out of your profits. You can reduce these rejection losses to a minimum by specifying 99.99% pure LINDE argon. High purity argon is your insurance that your welds will be free from contamination and porosity—resulting in fewer rejects and higher profits.

But there's more to the LINDE story. You can be sure of your gas supply when you order LINDE argon. LINDE's many strategically located plants and distribution facilities can be counted upon to provide all the high purity argon you need even when unexpected production peaks exceed normal demands. In addition, you can call upon LINDE's Engineering Service to help you solve tough production problems when time means money.

Call your nearest LINDE office today for more information about how LINDE argon—plus LINDE Engineering Service can mean increased production and greater profits for you.

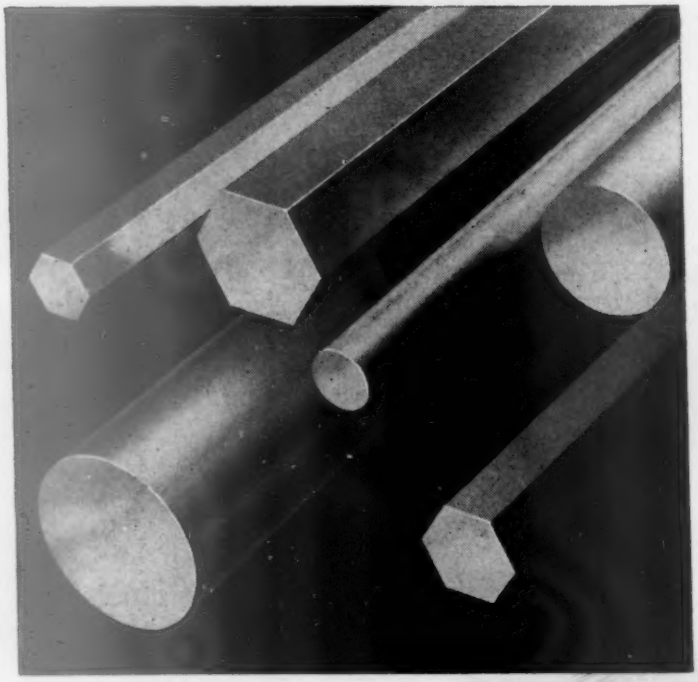
Linde Air Products Company
A Division of Union Carbide and Carbon Corporation
30 East 42nd Street UCC New York 17, N. Y.
Offices in Other Principal Cities
In Canada: DOMINION OXYGEN COMPANY
Division of Union Carbide Canada Limited, Toronto

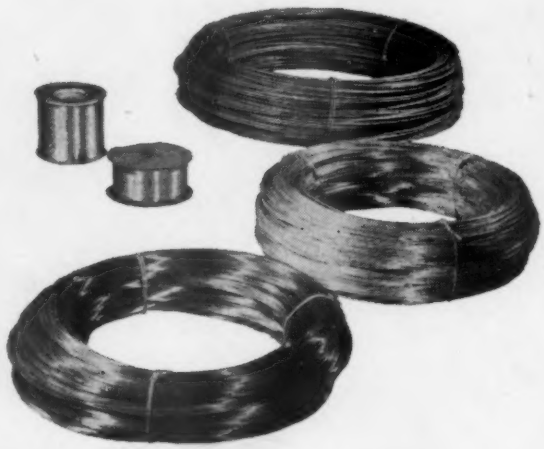
Linde
Trade-Mark

The term "Linde" is a registered trade-mark of Union Carbide and Carbon Corporation.

For More Information Circle No. 185 on Inquiry Card—Page 17

KAISER ALUMINUM PRODUCTS



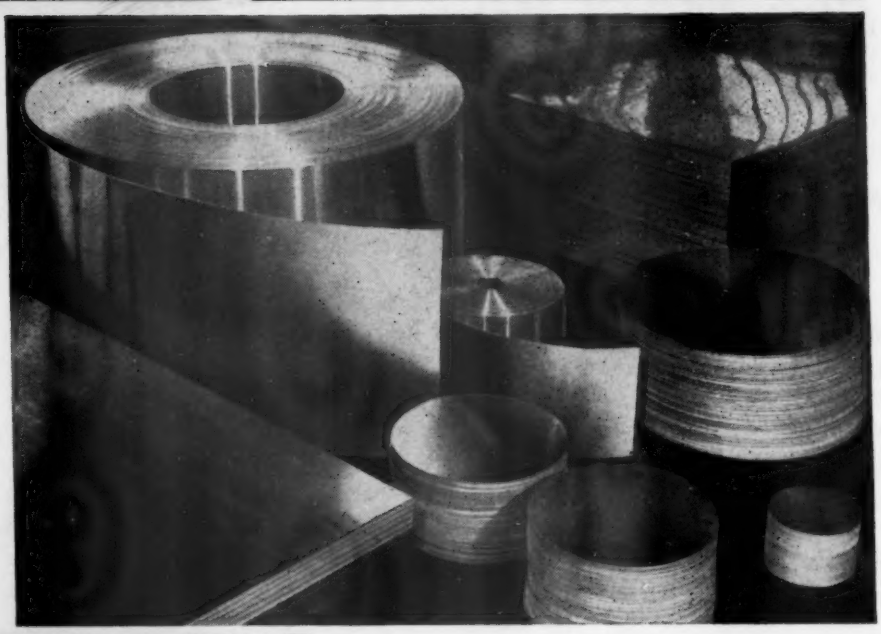


Wire

Supplied as round drawn wire, hexagonal wire, rivet wire, welding wire, screen wire, EC wire, redraw wire.

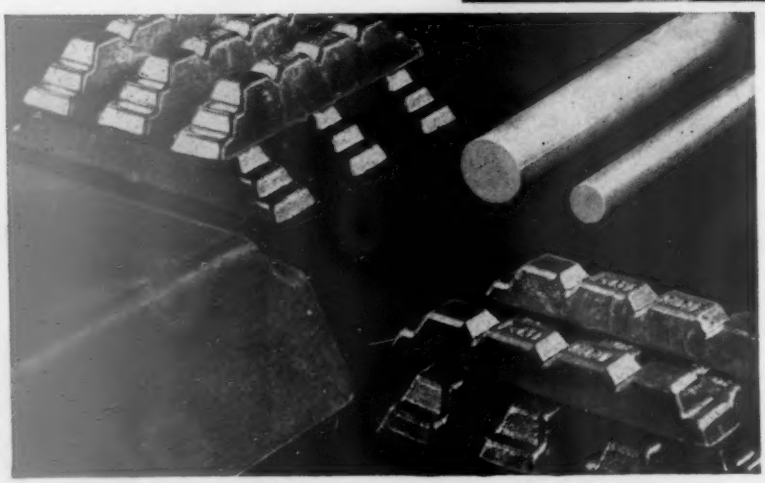
Rod and Bar

Available in a wide range of alloys in rolled and cold finished rod and bar, round and hexagonal standard screw machine stock, hexagonal bar, redraw rod, rivet rod and round forging stock, square and rectangular bar.



Sheet and Plate

Supplied as flat sheet, plate, coil sheet, circles in a complete range of alloys, sizes and tempers. Specialty sheets available on inquiry.



Pig, Ingot and Billets

Kaiser Aluminum produces Pig, Ingot and Extrusion Billets in a range of alloys and sizes to meet your specific requirements.

for you...the nation's fabricators



Extruded Shapes to meet your specifications

All standard alloys are available in custom shapes (solid, semi-hollow and hollow), structural, rod and bar, and in extruded tube. Like all our products, extrusions are manufactured under metallurgical control—thus assuring you of highest quality.

MORE THAN 85 per cent of Kaiser Aluminum's total production is sold in the form of these mill products for fabrication by customers. It's the highest percentage in the industry.

We believe we are ideally equipped to work with you, because serving manufacturers with basic aluminum is our primary business.

In recent years, our services have been expanded in order to keep pace with our greatly increased production capacity—which today stands at close to 30 per cent of all the primary aluminum made in this country.

We have vastly expanded our national warehousing system, our distributing program, and our staff of metallurgists and field engineers.

We believe that the kind of service we offer—combined with the unsurpassed quality of Kaiser Aluminum—should be of particular interest to all aluminum fabricators in these days of stiffer competition.

For complete information, call or write any Kaiser Aluminum sales office, located in principal cities. See our catalog in Sweet's Product Design File or write for copy. Kaiser Aluminum & Chemical Sales, Inc., *General Sales Office,* Palmolive Bldg., Chicago, 11, Illinois. *Executive Office,* Kaiser Bldg., Oakland 12, California.

Other Kaiser Aluminum products include: industrial foil, and electrical conductor. Kaiser Aluminum also supplies household, freezer and broiler foil for home uses; Shade Screening for the building industry and roofing and siding sheet for farm and industrial buildings.

MAIL COUPON FOR FREE HANDBOOK

Send for the new Sheet and Plate Handbook, 152 pages. A "must" for every fabricator of aluminum.

KAISER ALUMINUM & CHEMICAL SALES, INC.
INDUSTRIAL SERVICE DIVISION
5842 KAISER BLDG., OAKLAND 12, CALIFORNIA

Please send my free copy of "Sheet and Plate Handbook."

Name_____

Firm_____

Address_____

City_____ State_____

Kaiser Aluminum

setting the pace—in growth, quality and service

For More Information Circle No. 186 on Inquiry Card—Page 17

how two companies cut packing costs

Read this if you ship in corrugated or fibre cartons! It tells how two well known manufacturers cut packing costs . . . by thousands of dollars *annually* . . . with International Carton-Stapling Machines. Here's the story:



$28,000 saved by Harrison Steel Cabinet Co., manufacturers of kitchen wall, base and sink cabinets. Harrison improved working conditions . . . doubled production.



$20,000 saved by Uarco, Inc., manufacturers of business forms. Closing 2,500 cartons formerly took 48 man-hours . . . now it takes 12 man-hours.

40 models...from portable units to big multi-head automatic models. Write for details.

INTERNATIONAL STAPLING MACHINES
INTERNATIONAL STAPLE & MACHINE COMPANY
804 E. Herrin St., Herrin, Illinois

For More Information Circle No. 187 on Inquiry Card—Page 17

Fast-Curing Plastic Steps Up Molded Parts Production

Bakelite Co. Div., Union Carbide & Carbon Corp., 260 Madison Ave., New York 16, N. Y., says that its multi-purpose phenolic plastic, BMG-5000, has a wide molding latitude and faster curing time. It is effective with most types of molds or molding machines and helps to reduce material inventories and cut production costs for molders. This Bakelite phenolic, formulated to combine the most desirable properties and appearance in one material, eliminates the buying and storing of many different compounds for various mold and molding requirements. It allows longer pre-heating at higher temperatures and fills out molds at lower pressures than other multi-purpose phenolic molding plastics.

Circle No. 66 on Inquiry Card—Page 17

Special Forks Available

Towmotor Corp., 1226 E. 152nd St., Cleveland 10, Ohio, has developed special forks, for its industrial trucks, that adjust hydraulically from side to side. They are ideal when a unit must be used alternately as a clamp truck or a fork truck. They also speed handling when different widths pallet loads must be handled. Easy to install, these hydraulically adjustable forks bolt directly onto the support plates of the standard Towmotor clamp operating mechanism. The entire mechanism can be detached easily, should standard clamps be required.

Circle No. 67 on Inquiry Card—Page 17

Fiberglas Material Provides Permanent Form for Decks

An incombustible Fiberglas acoustical form board, made by Owens-Corning Fiberglas Corp., Toledo 1, Ohio, provides a permanent form for decks of commercial or industrial buildings and schools. It also serves as an attractive interior ceiling with thermal and acoustical insulation. Lightweight, the board is easy to install by standard methods and is strong enough to carry wet gypsum. Being porous, it has a noise reduction coefficient of 75%. Its use greatly increases the insulating value of the deck, resulting in savings on fuel. It is available in these sizes: 32 x 48 x 1, 1½ and 2 inches; 32 x 42 through 47¾ and ¼ in. increments x 1 inch; and 24 x 36 through 96 in. by ¼ in. increments x 1 in.

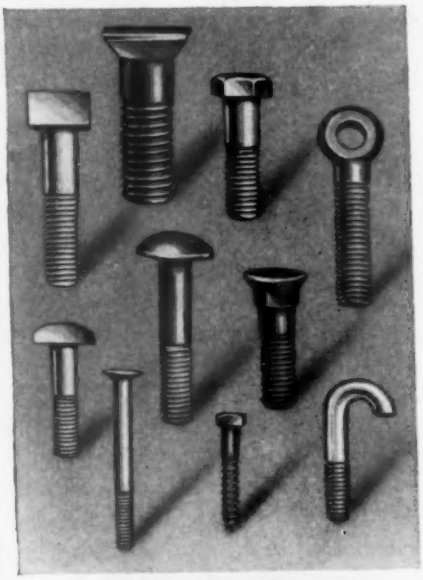
Circle No. 68 on Inquiry Card—Page 17

Uniform Class 3 Fit
BOLTS NUTS STUDS



TITANIUM
- Carbon Steel
- Alloy Steels
- Stainless Steels
- Silicon Bronze
- Naval Brass
- Monel Metal

You can depend on a uniform Class 3 fit if required when you buy Pawtucket threaded fasteners. Standard items or specialties — all Pawtucket products are accurately made in standard dimensions or to your specifications. Heat treating with precision-controlled modern equipment.



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PAWTUCKET
MANUFACTURING COMPANY
327 Pine St. • Pawtucket, R. I.
THE PLACE TO SOLVE YOUR BOLT PROBLEMS
T.M. REG.
"The Bolt Man"

For More Information Circle No. 188 on Inquiry Card—Page 17

For More Information Circle No. 189 on Inquiry Card—Page 17 →



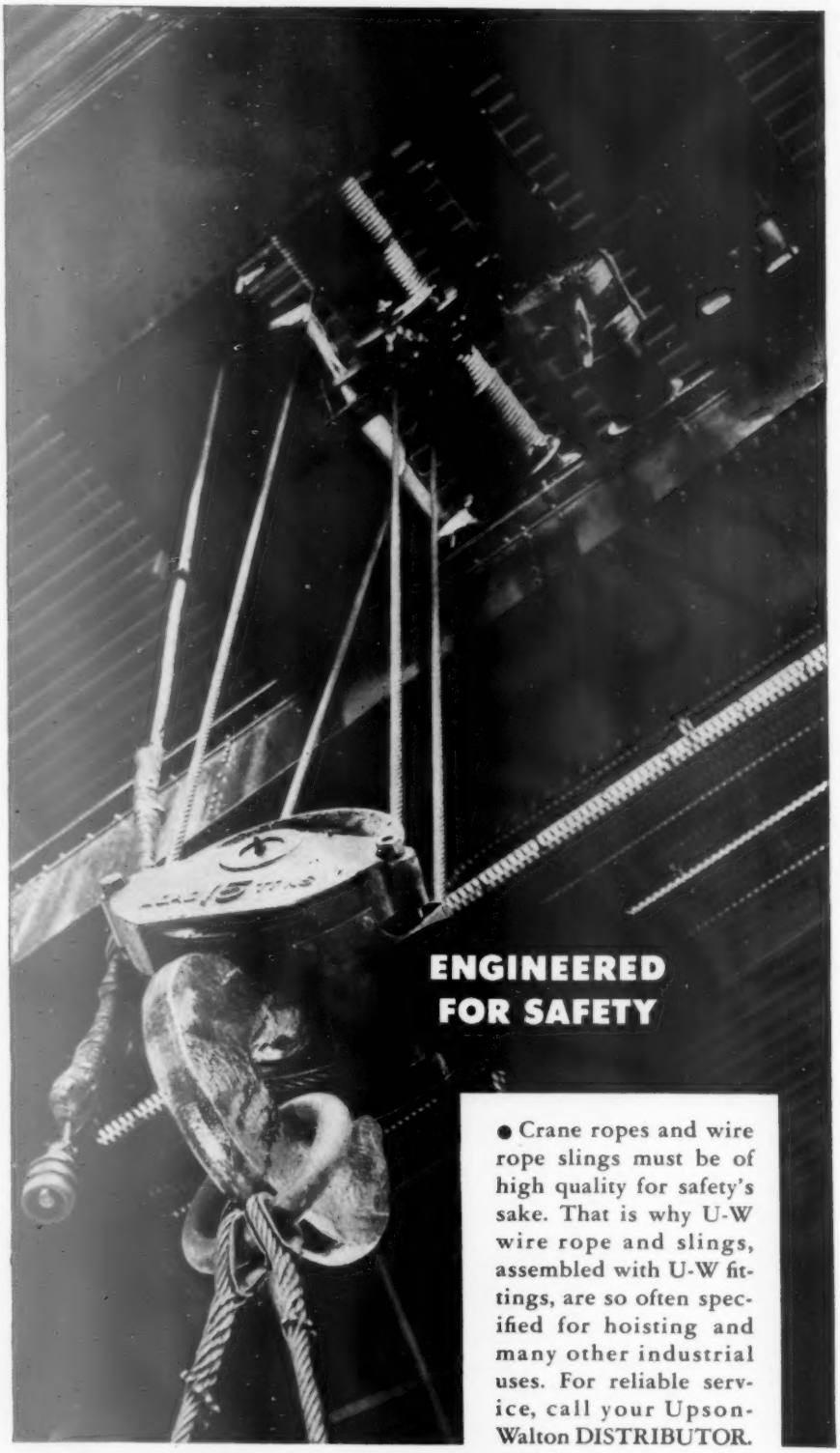
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High quality stainless sheet and strip steel . . . for the product you make today and the product you plan for tomorrow.

McLouth Steel Corporation
DETROIT, MICHIGAN
Manufacturers of Stainless and Carbon Steels

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wire rope



● Crane ropes and wire rope slings must be of high quality for safety's sake. That is why U-W wire rope and slings, assembled with U-W fittings, are so often specified for hoisting and many other industrial uses. For reliable service, call your Upson-Walton DISTRIBUTOR.

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MANUFACTURERS OF TACKLE BLOCKS, WIRE ROPE, ROPE FITTINGS—ESTABLISHED 1871

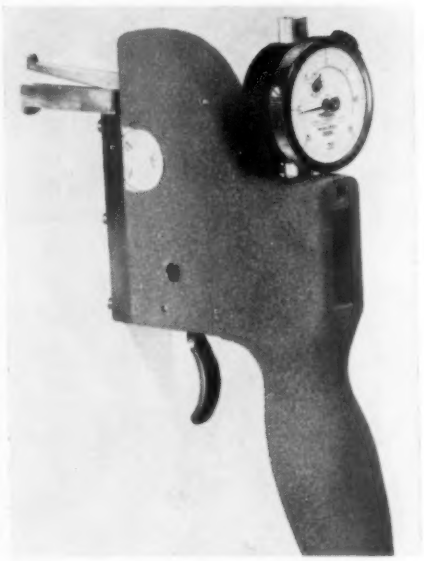
For More Information Circle No. 190 on Inquiry Card—Page 17

Electrode for Low-Medium Carbon Steel

The electrode, Rocket No. 24, is recommended by the makers, Hobart Brothers Co., Dept RE, Troy, Ohio, for welding operations requiring AWS classes E6012 and E6020 electrodes such as machinery, low pressure storage tanks and light structural work. It has a high deposition rate with less physical effort in welding and less skill in operation required. It produces a high quality weld with a finely rippled head approaching the appearance of a submerged arc weld. Spatter is exceptionally low.

Circle No. 69 on Inquiry Card—Page 17

Adjustable Gage Measures I.D. of Ring Grooves

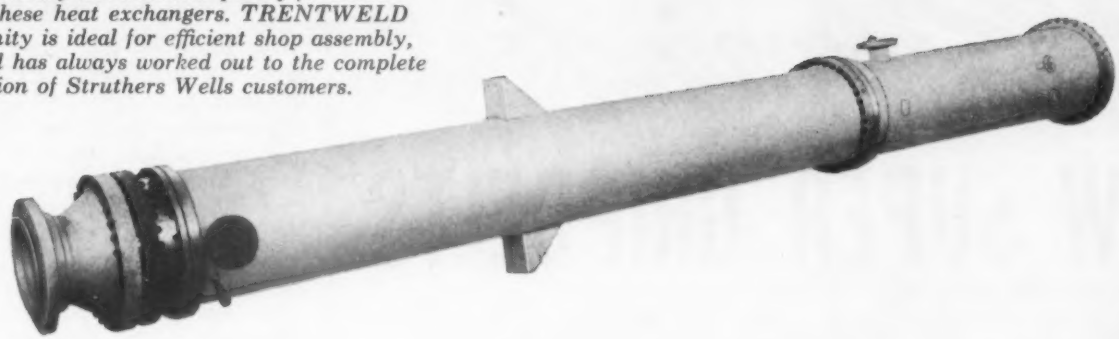


Manufactured by Federal Products Corp., 1144 Eddy St., Providence 1, R. I., the model 99P gage measures the diameters of internal grooves such as those for "O" rings, snap rings, "truarc," etc. It is adjustable to measure diameters between .725" and 2.625". The contacts are located at the extreme ends of the gage arms, making it possible to check grooves that are located at the bottom of blind holes. The reference or fixed contact is on the lower arm, which means that neither the weight of the gage nor any pressure from the operator's hand will affect the reading.

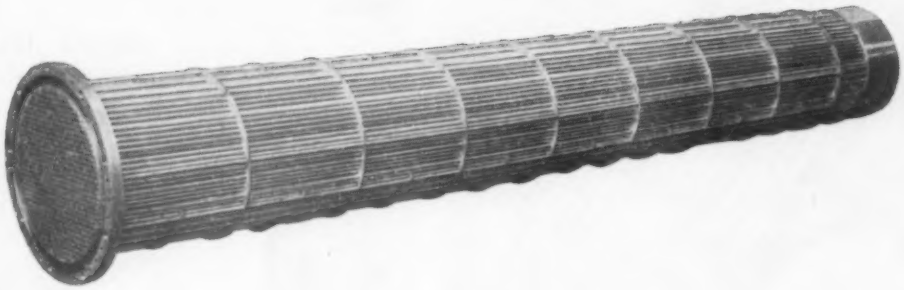
Circle No. 70 on Inquiry Card—Page 17

QUICK—CONVENIENT
Use the Inquiry Card on Page 17 for additional information on any product

Struthers Wells Corp. needed top dimensional accuracy and material quality for tubes for these heat exchangers. TRENTWELD uniformity is ideal for efficient shop assembly, and has always worked out to the complete satisfaction of Struthers Wells customers.



always uniform . . . extra quality . . . largest selection



TRENTWELD stainless tubing

It takes *specialists* to manufacture stainless welded tubing of uniformly high quality. That's why TRENTWELD is the *preferred standard* for quality wherever stainless or high alloy tubing is required.

For TRENTWELD stainless tubing is the product of tube mill specialists. The unique Trent process results in a *uniformly sound* weld indistinguishable from the parent metal—*and equal or superior to it in strength, ductility and corrosion resistance.*

Don't forget, too, that Trent offers you the widest size range found anywhere. ⅛" to 40" O.D. are standard sizes...and even larger diameters are available if you need them.

So, whether you need stainless tubing for heat exchangers or kiln dryers...fountain pens or frying pans—*for any requirement* for stainless or high alloy tubing—remember: *you can't buy better tubing than* TRENTWELD.



FREE – ask for your copy of the new book "Trentweld Stainless and High Alloy Tubing." You'll find practical details on applications, plus full tables on physical and chemical properties, and weights per foot on the sizes and grades you need. Send for your copy today.



TRENTWELD

STAINLESS STEEL TUBING

TRENT TUBE COMPANY, GENERAL SALES OFFICES, EAST TROY, WISCONSIN (Subsidiary of CRUCIBLE STEEL COMPANY OF AMERICA)

For More Information Circle No. 191 on Inquiry Card—Page 17

Browning's
NEW SUPER GRIPBELTS

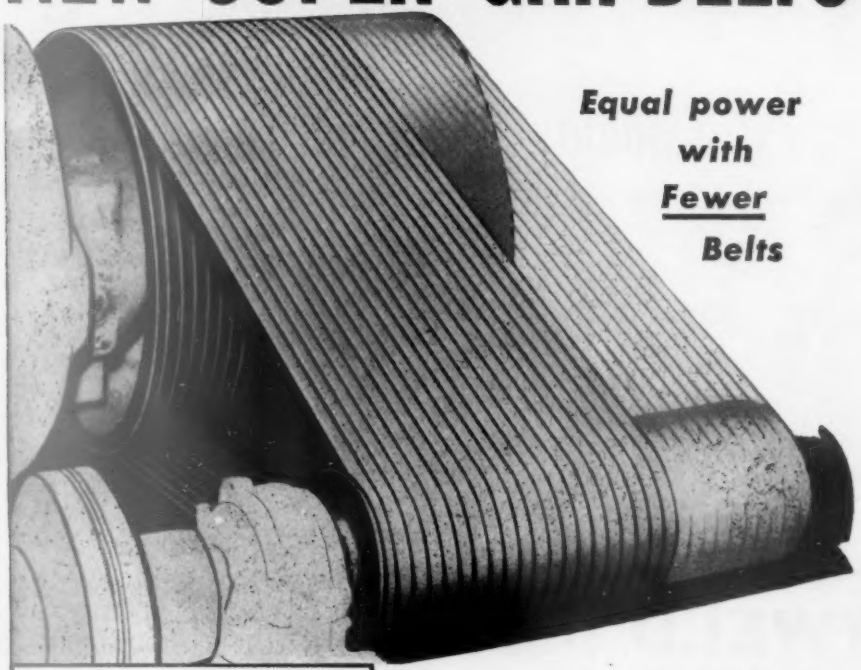




Illustration shows how 20 Browning Super Gripbelts can deliver same power as 30 standard belts, saving space and reducing sheave cost. Improved synthetic cord construction provides far greater strength and safety margin, better grip, less slip. Minimum stretch, maximum flexibility, simplified matching. For complete information ask for Bulletin 2019.

Browning V-Belts and Sheaves . . .
the Complete V-Drive Line



Browning MANUFACTURING COMPANY MAYSVILLE, KENTUCKY

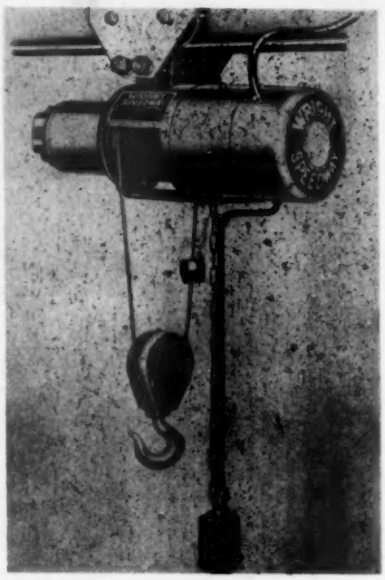
For More Information Circle No. 192 on Inquiry Card—Page 17

Simultaneous Thrust Surface, Adjacent Diameter Grinding

Norton Co., Worcester 6, Mass., announces its new Type CV-4 semi-automatic angular wheel slide grinding machine. Replacing the C type angular machine, the CV-4 rapidly grinds thrust surfaces and adjacent diameters simultaneously in a single, automatically controlled plunge grind. It cuts grinding costs by eliminating the separate operation normally necessary when similar jobs are done in conventional cylindrical grinders. Furthermore, the machine produces a concentric grain pattern in the finish of the shoulder or thrust surface ground.

Circle No. 71 on Inquiry Card—Page 17

Electric Hoists Have Low Maintenance Costs, Down Time



Wright frame 1 type electric hoists have automatic cam-actuated brakes good for 3,000,000 applications. Tests indicate maintenance savings of more than 50% over other types of small electric hoists. There are three models: a standard long lift hoist, a close headroom hoist and a four-part single reeved hoist. The first two models take loads up to one ton, the third up to two tons. The housing is designed so that the side cover and end cover can be unscrewed and exposed parts quickly serviced. Set screw adjustments compensate for brake lining wear. Compression brake springs are factory-set and totally enclosed a-c or d-c motors are used. American Chain & Cable Co. Inc., 929 Connecticut Ave., Bridgeport 2, Conn. makes them.

Circle No. 72 on Inquiry Card—Page 17

DISTRIBUTORS OF INCO PRODUCTS

Mill and Warehouse Service Centers for Inco Nickel Alloys (listed below) and Primary Nickel for alloying purposes.

NORTHEAST & MIDDLE ATLANTIC

Whitehead Metal Products Co., Inc.
Baltimore 5, Md.
Buffalo 7, N. Y.
Cambridge 39, Mass.
Harrison, N. J.
New Haven 13, Conn.
New York 14, N. Y.
Philadelphia 40, Pa.
Syracuse 4, N. Y.

EAST-NORTH-CENTRAL

Williams and Company
Cincinnati 29, Ohio
Cleveland 14, Ohio
Columbus 8, Ohio
Louisville 3, Ky.
Pittsburgh 33, Pa.
Toledo 2, Ohio

MIDDLE WEST, CENTRAL & NORTH

Steel Sales Corporation
Chicago 23, Ill.
Detroit 10, Mich.
Grand Rapids 2, Mich.
Indianapolis 18, Ind.
Kansas City 8, Mo.
Milwaukee 9, Wis.
Minneapolis 13, Minn.
St. Louis 10, Mo.

SOUTHEAST

J. M. Tull Metal & Supply Co.
Atlanta 3, Georgia

SOUTH, SOUTHWEST & MOUNTAIN

Metal Goods Corperation
Dallas 9, Tex.
Denver 2, Colo.
Houston 3, Tex.
New Orleans 12, La.
Tulsa 3, Okla.

PACIFIC COAST & FAR WEST

Pacific Metals Company, Ltd.
Los Angeles 21, Cal.
Salt Lake City 4, Utah
San Diego 1, Cal.
San Francisco 10, Cal.

NORTHWEST

Eagle Metals Company
Portland 12, Ore.
Seattle 4, Wash.
Spokane 24, Wash.

CANADA

Wilkinson Company, Ltd.
Edmonton, Alberta
Vancouver, B. C.

Robert W. Bartram, Ltd.
Montreal 1, Que.

Alloy Metal Sales, Ltd.
Toronto 2, Ont.

MEXICO

La Paloma Co. De Metales, S. A.
Mexico, Mexico, D. F.

HAS YOUR PROBLEM ALREADY BEEN SOLVED? Perhaps a man halfway across the country — or even next door — has solved a metal selection problem similar to the one that's facing you right now. That is why we think you will be interested in reading "Nickelsworth", a quarterly publication reporting new and unusual solutions to industrial metal problems made possible by nickel alloys. To start your complimentary subscription, just send your name and address to Inco.



Heat got you?

Here's a man (he might be you) who has been made mighty uncomfortable by a high temperature problem.

He needs a metal or alloy that will withstand plenty of heat. And the number of choices available is strictly limited.

What can he do?

If he'd only think of his Inco Distributor salesman! There's a fellow who can help put a hot problem on ice — fast!

Inco's High Temperature Engineering Service, for example, is just one of the resources he can call on. Over the years, our High-Temperature Engineers have conducted tests on hundreds of metals and alloys, and have amassed a great amount of valuable mechanical and corrosion-resisting data.

Covering scores of applications in practically every industrial field, this material may now include the answer to a problem you're working on. If not, you can be sure strenuous effort will be made to *find* the answer!

So—whenever metal-selection or -procurement problems arise —keep your Inco Distributor salesman in mind. A local source of supply for many metals, including nickel alloys, primary nickel for alloying purposes, copper, brass, aluminum and stainless steels. One might provide every property that's needed.

Your Inco Distributor salesman knows what these metals have done, and what they're capable of doing. More important, though, he knows about men who can be put to work on your specific problems — at no cost or obligation to you.

If the heat's on, all he needs is a nod from you to start him hunting for a way to beat it. The International Nickel Company, Inc., 67 Wall Street, New York 5, N. Y.

Inco Nickel Alloys

MONEL® • "R"® MONEL • "K"® MONEL • "KR"® MONEL
"S"® MONEL • INCONEL® • INCONEL "X"®
INCONEL "W"® • INCOLOY® • NIMONIC® Alloys • NICKEL
LOW CARBON NICKEL • DURANICKEL®

GAIR can help PROTECT YOUR PRODUCT



with engineered PACKAGING

Have you ever counted the hazards your product faces during transportation and warehousing? The rough handling and battering, plus pressure from stacking, are conditions that demand positive protection.

To solve the problem, Gair engineers design shipping boxes to give *two-way protection:*

1. Protection from external damage and shock – by the correct choice of box style;

2. Protection from internal shifting and breakage – by scientifically-designed inner packing.

In addition, Gair makes sure that the box is simple to pack.

Take advantage of this engineering service . . . without charge. Check with the Gair factory nearest you to learn how. Learn, too, how Gair's assured material supply and delivery service can help give you the best in corrugated shipping boxes.

Ask for our booklet on the sealing of boxes.

CAMBRIDGE, MASS. • CLEVELAND, OHIO • HOLYOKE, MASS. • LOS ANGELES, CAL. • MARTINSVILLE, VA.
NO. TONAWANDA, N. Y. • PHILADELPHIA, PA. • PORTLAND, CONN. • RICHMOND, VA. • SYRACUSE, N. Y. • TETERBORO, N. J.

GAIR

SHIPPING CONTAINERS
FOLDING CARTONS
PAPERBOARD

ROBERT GAIR COMPANY, INC. • 155 EAST 44th STREET • NEW YORK 17

For More Information Circle No. 194 on Inquiry Card—Page 17

. . . for swift service



Whatever your delivery requirements may be on Rex Drive and Conveyor Chain, Sprockets, Flexible Couplings, and Shafer Self-aligning Roller Bearings, you'll find Chain Belt Company more than able to meet your needs. 150 stock-carrying Distributors are backed up by 31 District Sales Offices, 9 Warehouses and 5 Plants in cities strategically located to offer unequalled service to you.

. . . wise counsel



Chain Belt Field Sales Engineers and Distributors are expert at solving power transmission and conveying problems. And, because they are backed by a complete line, they are able to recommend the one best chain that exactly suits your needs. Chances are they can help you cut costs or improve operations by their chain selection assistance.

on drive and conveyor chains • sprockets • self-aligning roller bearings • flexible couplings • belt conveyor idlers • spray nozzles

LOOK TO

CHAIN BELT COMPANY

54-503

CHAIN *BELT COMPANY*
4764 W. Greenfield Ave., Milwaukee 1, Wis.

☐ I would like to know the name and address of my Chain Belt Distributor.
☐ Please send me informative literature on ☐ Rex Roller Chains,
☐ Rex Chabelco Chains ☐ Rex TableTop Chains ☐ Rex Cast Chains
☐ Complete Rex Line ☐ Rex Flexible Couplings ☐ Rex Sprockets
☐ SHAFER Bearings ☐ Rex Belt Idlers ☐ Rex Spray Nozzles
☐ I would like to see a Chain Belt Man.

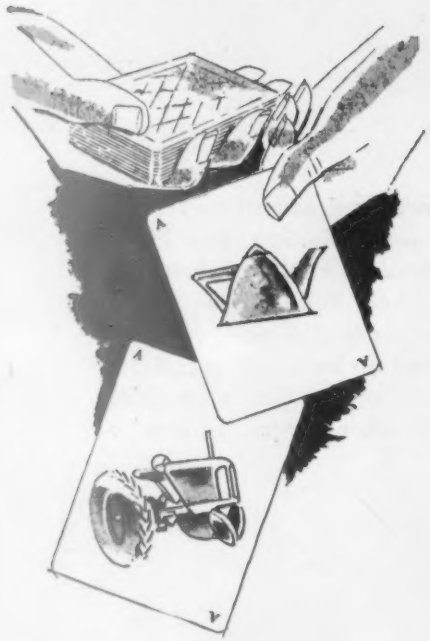
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Company.....

Address.....

City.....*Zone*.....*State*.....

A Good Deal...



Whether it's teapots or tractors, cutlery or copper tubing you're looking for, chances are you'll find it at New Orleans' famed International Trade Mart—at substantial savings.

Here, under one roof, are goods from all the world. Eleven countries maintain year-round salesrooms to exhibit the products of their national industries. In addition, many private importers have scores of lines for sale.

Remember—each dollar you spend abroad comes back to buy the products of American farms and factories. Write *today* for full details.

INTERNATIONAL TRADE MART

NEW ORLEANS, U. S. A.

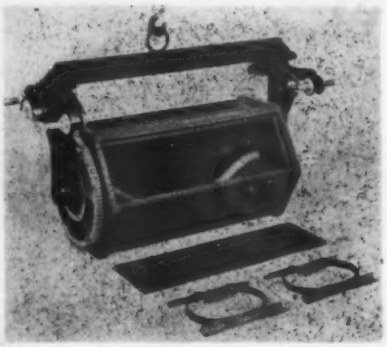
For More Information Circle No. 196 on Inquiry Card—Page 17

Thermoplastic Resin Is Tough as Rubber, Hard as Most Metals

In announcing that it is entering the plastics manufacturing field, Borg Warner Corp., 310 S. Michigan Ave., Chicago 4, Ill., states that its subsidiary, Marbon Corp., has developed a shatterproof, multi-purpose resin. It is so heat resistant that it can hold boiling water and so soluble that it can be sprayed in colors on elastic rubber surfaces but won't chip off. The new substance has been given the name of Cycolac and is a high impact, thermoplastic styrene type resin. It has the toughness of rubber and the surface hardness of most metals. It can be fabricated into plumbing pipes that withstand 200 psi pressure and are 8 times lighter than metal pipes.

Circle No. 73 on Inquiry Card—Page 17

Tempron in Plating Barrel



Users of plating equipment will be interested in a plating barrel that has a cylinder with superior abrasion resistance and ability to withstand stronger acids. The cylinder is made of Tempron hard rubber. Tempron withstands, even under load, higher temperatures than are possible with any thermoplastic material. Stronger than even one-piece construction, the ingenious system of interlocking panels and ribs also permits easy individual replacement of component parts whenever necessary. Manufacturer is The Udylite Corp., 1651 E. Grand Blvd., Detroit 11, Mich.

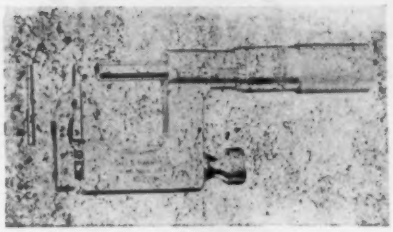
Circle No. 74 on Inquiry Card—Page 17

Tape Adheres at 350 F

A tape specially designed for masking pre-treated surfaces such as anodized aluminum and magnesium will adhere at baking temperatures of 350°. The 60 yard long tape is available in 15 standard widths ranging from ¼" to 3". For more information write: Behr-Manning Corp., Div., Norton Co., Troy, N.Y.

Circle No. 75 on Inquiry Card—Page 17

New Micrometer Features Interchangeable Anvils



Introduced by the L. S. Starrett Co., Athol, Mass., a new patented micrometer makes measurements that are not possible with regular micrometers. Two interchangeable anvils are furnished. One, a rod anvil .120" diameter, is useful for measuring from a hole to an edge. The other, a flat anvil measuring .125" x .060", conveniently measures distances from the inside of a slot or groove to an edge. Additional anvils for special jobs can easily be made and installed. Changeover involves nothing more than loosening and tightening a locking screw.

Circle No. 401 on Inquiry Card—Page 17

Etcher Permanently Marks Metal Finished Products

A lightweight electric etcher with alloy tip point is available for permanently marking tools, dies, jigs, and other finished metal products. It is equipped with 5½ ft. cord and plug, ground clamp and extra flexible asbestos cables. Compact and portable, the etcher, made by Standard Electric Products Co., 2240 E. Third St., Dayton, Ohio, is ideal for use by industrial plants. It can be continuously used since cooling air circulates around the tip.

Circle No. 402 on Inquiry Card—Page 17

Chrome Plating Process Adds Life to Tools

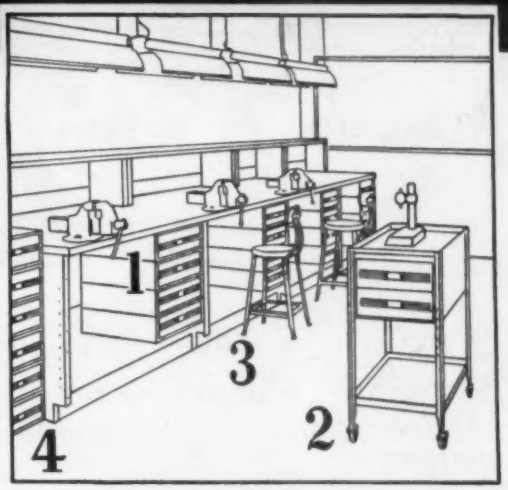
National File Co., Lansing, Mich., announces a precision plating unit, "Krome-King," for adding extra life to such tools as taps, reamers, and burnishing tools. The equipment will chrome plate accurately to .0001". Depth of plate is determined by time and dimensions of the item to be plated. At room temperature, the process produces a soft dull chrome; when the electrolyte is at 130 F, a hard, bright chrome is produced. The manufacturer claims the unit can be operated by one with no knowledge of chemistry. No analysis of solution is necessary other than measurement of specific gravity with a hydrometer.

Circle No. 403 on Inquiry Card—Page 17



MODERNIZING YOUR LAB?
Fit it up FAST and at LOW COST
with standard HALLOWELL Shop Equipment

You'll save time—you'll save money—and you'll get the adaptability that only a full line of interchangeable equipment can give you. Let us help you engineer your space for maximum efficiency. Write for complete details about standard ready-made HALLOWELL Shop Equipment—stocked by leading distributors everywhere. STANDARD PRESSED STEEL Co., Jenkintown 31, Pa.



1. Cabinet Benches
2. Tool Stands
3. Stools and Chairs
4. Drawer Tiers

HALLOWELL SHOP EQUIPMENT DIVISION SPS JENKINTOWN PENNSYLVANIA

For More Information Circle No. 198 on Inquiry Card—Page 17

PAGE FENCE—Since 1883

• AMERICA'S FIRST WIRE FENCE •



• Page Chain Link Fence, pioneered by Page and made only by Page, is quality controlled from raw metal to erected fence. Whether you choose heavily-galvanized Copper Bearing Steel, or long-lasting Stainless Steel, or corrosion-resisting Aluminum, you'll have a rugged fence on sturdy metal posts deep-set in concrete. Choose any one of 8 basic styles, varied by heights, types of gates, posts, top rails and barbed wire strands for extra protection. And to be sure of reliable workmanship your fence will be expertly erected by a specially trained firm. For helpful Page data and name of member nearest you...

Write to PAGE FENCE ASSOCIATION, Monessen, Pa., or look in Thomas' Register for listing of Page Chain Link Fence Distributors under "PAGE STEEL AND WIRE DIVISION," or see MacRae's Blue Book for listing under "FENCING, WIRE, LINK," or consult Sweet's Industrial Construction File.

PRODUCT OF PAGE STEEL & WIRE DIVISION OF AMERICAN CHAIN & CABLE COMPANY, INC.

For More Information Circle No. 199 on Inquiry Card—Page 17



PLYMOUTH Rubber Bands

OUTSTRETCH
OUTLAST
ALL OTHERS

Guaranteed by Good Housekeeping — Replacement or a Refund of Money if Not as Advertised Therein

PROMPT DELIVERY

- Bands for Every Purpose
- Saves Time and Labor in Production
- We'll Make Them for Your Special Needs

NATIONALLY DISTRIBUTED . . . AVAILABLE AT YOUR REGULAR SUPPLIERS

All Plymouth Standard Bands Made to Federal Specifications

PLYMOUTH RUBBER COMPANY, Inc., Canton, Mass.

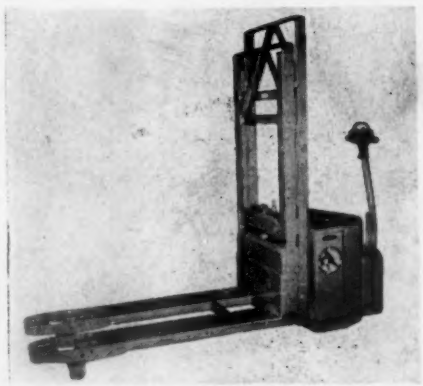
For More Information Circle No. 200 on Inquiry Card—Page 17

Simplifying Relief Angle Grinding on Forming Tools

A diaform wheel forming attachment is announced by Pratt & Whitney, Div. Niles-Bement-Pond Co., W. Hartford 1, Conn., designed to simplify grinding of relief angles on forming tools. Titled Series "R" Diaform with Relief Angle Compensator, it is available in three models and works on the pantograph principle. It eliminates distorted templates, projection drawings, and lengthy calculations to retain the form of the cutting edge on a forming tool when grinding the required relief.

Circle No. 76 on Inquiry Card—Page 17

Electric Pallet Truck Does Three Handling Operations



An electric pallet truck has been equipped by Lewis-Shepard, Watertown, Mass. with a double-hinged superframe. This enables the user to do three handling operations with one truck, rather than with three separate trucks. It handles (1) pallets; (2) skids; (3) skids with two different underclearances. The two frames, when they are not being used for skids, are automatically held in place by two spring latches and are well out of the way for pallet handling. No effective fork truck length is lost when the superframes are up. Lowered height of truck in handling pallets is 3¼"; lowered height of first superframe is 6¼"; lowered height of second superframe is 8¾".

Circle No. 77 on Inquiry Card—Page 17

Want more Facts on any of the products shown in this issue?

Get them quickly and easily by using the INQUIRY CARD PAGE 17

For More Information Circle No. 201 on Inquiry Card—Page 17→



Remember the trade marks "tt" and "TUBE-TURN" are applicable only to products of TUBE TURNS.

Engineered for tough service

TUBE-TURN CONCENTRIC REDUCERS provide a gentle transition from large to small diameters with strong knuckle contours. They exceed the pipe itself in bursting strength and have fatigue strength equal to that of the joining butt weld.

This extra quality at no extra cost is typical of the entire Tube Turns' line. You can specify TUBE-TURN Welding Fittings and Flanges and *know* that you will get the *exact* answer to your specific piping problem. This leading line includes more than 4000 items in all piping materials, schedules and sizes to match *your* design . . . available promptly through your nearby Tube Turns' Distributor.

The Leading Manufacturer of Welding Fittings and Flanges

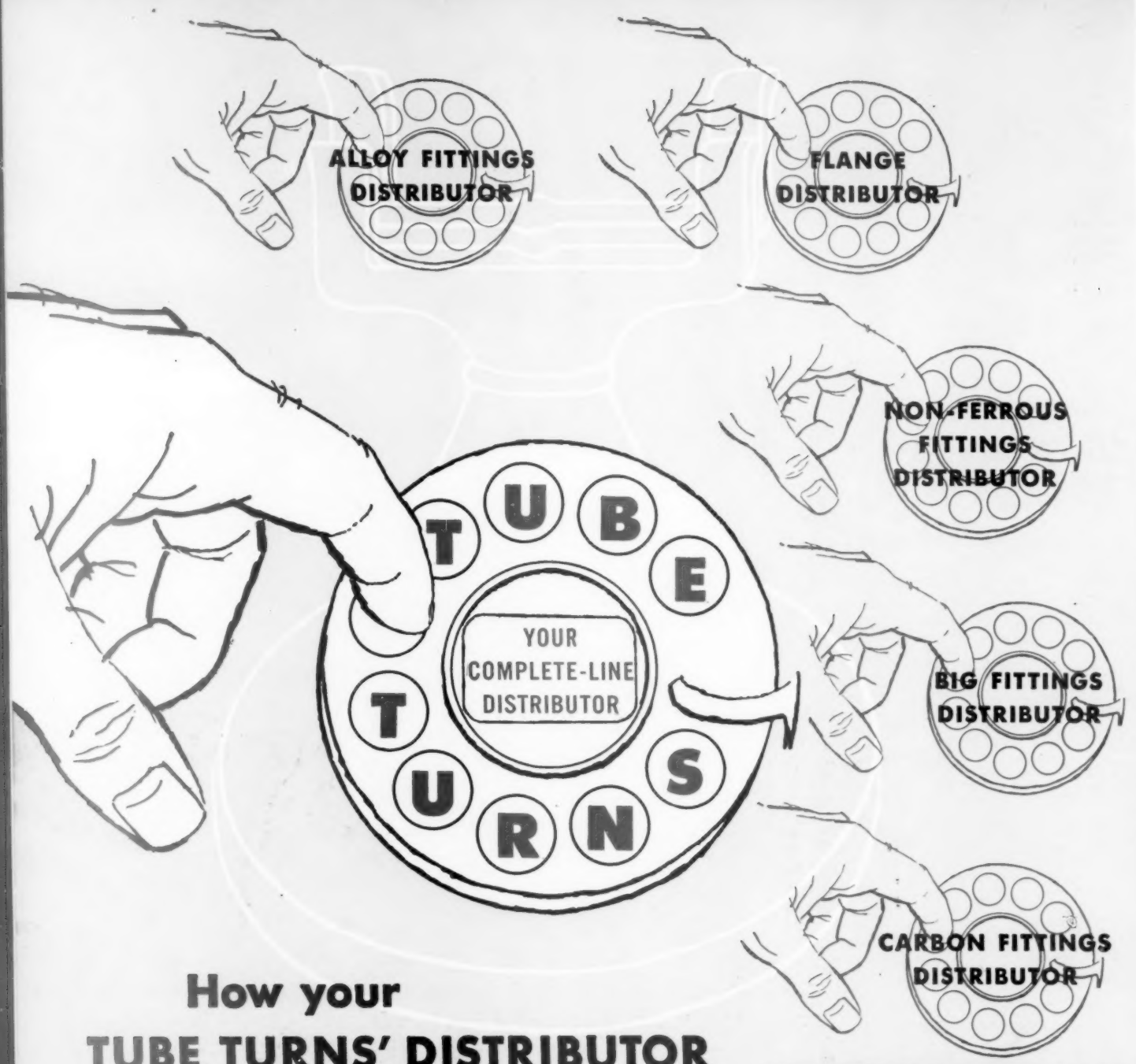
TUBE TURNS LOUISVILLE 1, KENTUCKY

A Division of National Cylinder Gas Company

DISTRICT OFFICES: New York • Philadelphia • Pittsburgh • Cleveland • Chicago • Denver • Los Angeles
San Francisco • Seattle • Atlanta • Tulsa • Houston • Dallas • Midland, Texas



CUTS YOUR COSTS



How your TUBE TURNS' DISTRIBUTOR saves you time and money



ONE CALL . . . ONE ORDER is all it takes to fill *all* your needs in welding fittings and flanges when you buy from your Tube Turns' Distributor. He provides industry's broadest line—over 4000 top quality items—different types, sizes, schedules and materials. He saves your purchasing time, cuts your red tape, acts as your warehouse and gives you prompt delivery and money-saving assistance on piping problems...backed by Tube Turns' world-famous engineers.

Are you taking advantage of this cost-cutting service?

"tt" and "TUBE-TURN" Reg. U. S. Pat. Off.



The Leading Manufacturer of Welding Fittings and Flanges

TUBE TURNS LOUISVILLE 1, KENTUCKY

A Division of National Cylinder Gas Company

DISTRICT OFFICES: New York • Philadelphia • Pittsburgh • Cleveland • Chicago • Denver • Los Angeles
San Francisco • Seattle • Atlanta • Tulsa • Houston • Dallas • Midland, Texas

Office Equipment and Supplies section of PURCHASING Magazine

AUGUST 1954



Modern lighting, a contrasting color scheme and the latest in office equipment enhance the new San Francisco offices of the American Chain & Cable Co., Inc., Bridgeport, Conn.

PURCHASING MAGAZINE—A CONOVER-MAST PUBLICATION
205 EAST 42ND STREET, NEW YORK 17, N. Y.



Get this free demonstration

HOW KARDEX PURCHASING RECORDS SAVE TIME...and MONEY

Here are a few routine buying questions which should be answered in seconds. How long does it now take you to get the answers?

- Are the specifications clear for each item requisitioned, in order to insure purchasing exactly what is needed?
- Do your records reflect entire company-wide needs for the same item in order to get effective quantity purchasing?
- Are consumption figures available to show how much an order can be increased or decreased safely under current condition?
- Is there sufficient lead time to assure buying the item at a reasonable price with assurance of delivery when needed?
- When was the item last purchased? What was the quantity and price? How much delivery time was required? And so on.

This Kardex Bookfold Demonstrator shows a whole range of purchasing procedures (20 of them) realistically set up in actual working form. It shows how complete visible facts on each item make possible fast, accurate judgment and action—no searches of completed purchase orders and correspondence files to get necessary facts . . . how standardized classification of all items simplifies and speeds purchase action . . . how simplified work steps relieve the buyer of details and save clerical time . . . how simply delivery of every item on order may be followed up with precision. Send coupon today for this free demonstration, or phone your local Remington Rand office.

Remington Rand INC.

ROOM 1827, 315 FOURTH AVENUE, NEW YORK 10

☐ Without obligation, kindly have your representative call to demonstrate Kardex Bookfold of Purchasing Procedures.

☐ Send 20-page booklet—"Purchasing Procedures That Save Time and Money"—X1202.

NAME_____ TITLE_____

FIRM_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

For More Information Circle No. 202 on Inquiry Card—Page 17

OFFICE EQUIPMENT News

Scientifically correct **supplementary illumination** through a combination of specially etched reflector and a light louvre of patented design is the feature of new desk lamps manufactured by



M. G. Wheeler Co., Inc., Greenwich, Conn. Called "Sight-Light", the lamps have a graceful arm extending 15 inches from a swivel ball. Turning a complete 360 degrees, the lamp provides comfortable seeing conditions over an entire working area. "Sight-Light" lamps are available in several different decorator colors to harmonize with all interiors.

Circle No. 78 on Inquiry Card—Page 17

Nearly invisible mending with a new **transparent mending tape** has been claimed by **Minnesota Mining and Manufacturing Co., St. Paul, Minn.** The "Scotch" brand 810 tape can be used for such jobs as taping riders, endorsements, notations and corrections in policies and legal documents. It is shrink-proof, stays crystal clear, won't ooze adhesive at the edges or leave a gummy residue and is extremely long-lasting. It comes in ¾" width on 1,296" rolls.

Circle No. 79 on Inquiry Card—Page 17

William E. Jacoby has been elected president of the New York Chapter of the National Association of Cost Accountants. He is controller of the A. R. Purdy Co., Inc., Lyndhurst, N. J.

Green is the color style of two new **portable typewriters** being introduced by **Underwood Corp., New York City.** The Underwood DeLuxe is a two-toned, non-glare, ivy green, while the Universal is a darker Brewster green. The DeLuxe has See-Set margins, touch tuning, key-set tabulation, full scale keyboard, variable line spacer, etc. The Universal offers a balanced segment shift, See-Set margins and automatic ribbon reverse.

Circle No. 80 on Inquiry Card—Page 17



Diebold, Inc., Canton, Ohio, is now marketing a 4-drawer, letter size **insulated file** providing 1-hour fire protection for vital records. It carries the Underwriters' Laboratories Class "C" Insulated Record Container label. Operating features include completely extendable and removable drawers, rubber cushioning to stop drawer-slam damage and noise, and roller bearings. Each compartment is fully insulated and double bolts on each drawer give extra holding power against impact or drop tests.

Circle No. 81 on Inquiry Card—Page 17

A new, low-cost **bookkeeping machine,** known as the Sensimatic 50, has been announced by the **Burroughs Corp., Detroit.** It is a highly automatic device with many features to meet the needs of important accounting tasks such as accounts receivable, simple ledger posting or receipting. Among the features listed are automatic 15-inch front feed carriage, two crossfooters, 99,999,999.99 listing and 999,999,999.99 totaling capacity, and original ledger and statement posting in one operation.

Circle No. 82 on Inquiry Card—Page 17

A 28-page booklet, entitled "Baltimore Business Forms Save Time", is being offered by **Baltimore Sales Book Co., Baltimore, Md.** It has ten articles on how business forms and systems are saving time in modern business. Illustrations of the forms, detailed reports on the systems and simplified flow charts are included. Free copies can be obtained by writing Thomas W. Richards, Adv. Mgr., Baltimore Salesbook Co., 3120-56 Frederick Ave., Baltimore 29.

Circle No. 83 on Inquiry Card—Page 17



Using magnesium for its carriage, the new Halda "Star" **typewriter** is being introduced to the American business machines market by **Facit, Inc., New York City.** The machine is Swedish-made.

Circle No. 84 on Inquiry Card—Page 17

(*Please turn to page* 174)

Matched Business Stationery

gets more attention, too!

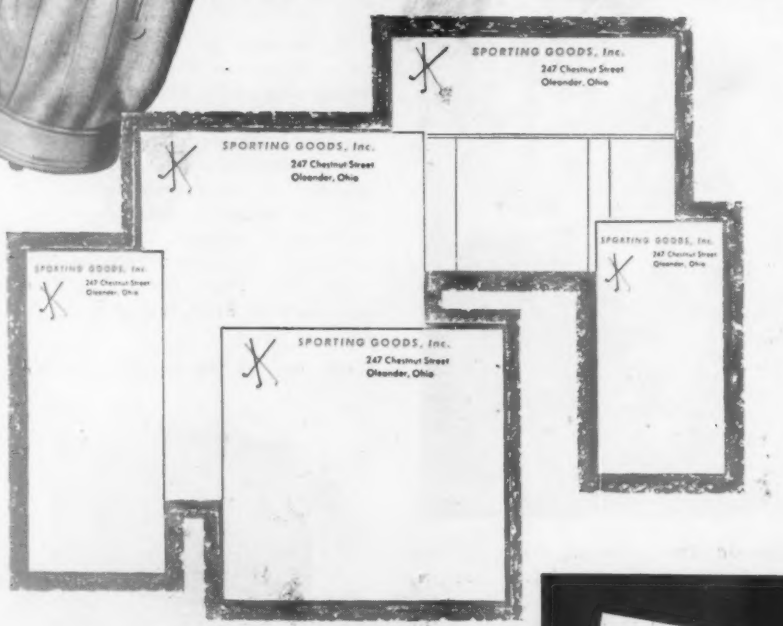


Your customers and prospective customers deserve your best approach. Why handicap the impression your company makes in correspondence with a series of unrelated designs on your letterheads, envelopes, invoices, and other business forms?

Matched business stationery can go a long way toward creating the desired impression that your business is well-organized, alert, and efficient.

Important, too, is the paper used. You'll find tub-sized, air-dried Gilbert new cotton fibre papers unsurpassed for appearance, strength, color, and finish. Ask your Supplier.

Gilbert
Bond Papers

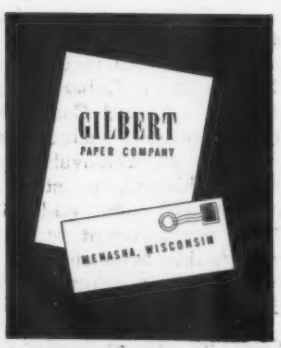


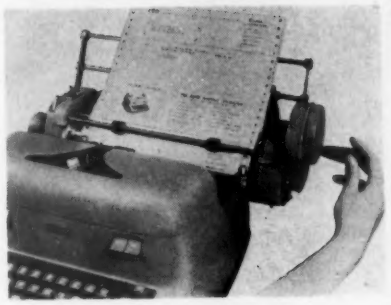
Gilbert Bond
25% new cotton fibre

Resource Bond
50% new cotton fibre

Radiance Bond
75% new cotton fibre

Lancaster Bond
100% new cotton fibre



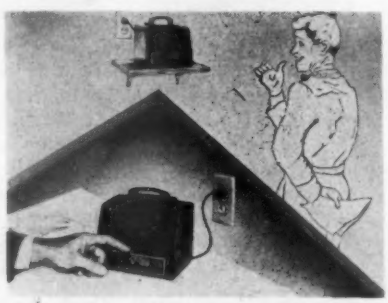


A **form line selector** to speed the typing of continuous forms has been introduced by **International Business Machines Corp., New York City. It is** mounted on the right end of the carriage on IBM's standard, executive, or lift-platen electric typewriters having 12 or 16 inch carriages. The device makes possible rapid advancement of forms from one typewritten line to the next desired line—or from one form to a succeeding one. Vertical stops from 1½″ to 12″ apart can be selected and the distance between stops can be adjusted to any required typing area within these limits.

Circle No. 85 on Inquiry Card—Page 17

Eberhard Faber Pencil Co., Brooklyn, N. Y., has announced a new line of **colored pencils** in 50 vivid colors. Called "Colorama", they are claimed to have a sturdier, longer-wearing lead with absolutely uniform, brilliant color, smoother coverage and a minimum of waxiness.

Circle No. 86 on Inquiry Card—Page 17



As the latest addition to its line of portable, all-purpose **intercoms, Vocaline Company of America, Inc., Old Saybrook, Conn.,** is introducing its Vocatron Automatic, model 201 TR. This two-station system eliminates outside installation as it merely plugs into an electrical outlet to talk back and forth over existing lighting circuits served by the same transformer. It needs no switching at the remote station as the master unit controls both sides of the conversation.

Circle No. 87 on Inquiry Card—Page 17

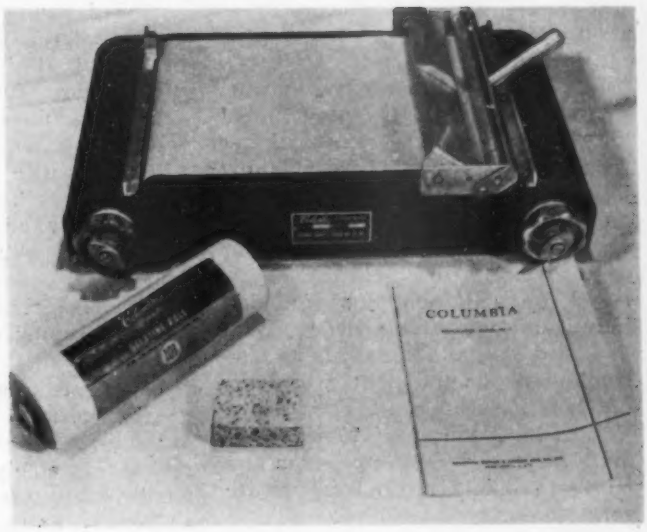
Peerless Photo Products, Inc., Shoreham, Long Island, has added two new distributors to its nationwide network. They are: Brown's Business Machines Co., Omaha, Neb., and J. Y. Hollingsworth Co., Portland, Ore.

Duplicating Equipment for the Economy-Minded Office

by G. H. Gutekunst, Jr.

PERHAPS the most interesting thing about duplicating machines and methods is the tremendous mechanical advances developed during the post World War II period. While it is not exactly true to call pre-war equipment "crude", still the technical advantages evident in today's machines far overshadows much of the earlier tools.

The two most common methods of duplication, stencil, or mimeograph, and spirit, or liquid, are not new by any means. But, until fairly recently it was a little difficult to get quality results with available equipment. Now, however, there is no question that the office duplicator is a high-speed precision machine well adapted to its purpose of providing an economical and practical means of turning out countless forms, bulletins, letters, etc., for high-speed industry.



Columbia Ribbon and Carbon Mfg. Co., Inc., makes this simple gelatin roll machine to duplicate hectograph masters.

In its simplest form, the mimeograph is a device which uses a stencil made of a thin fibrous material covered with a plastic coating. The material for reproduction is "cut" into the plastic coating and an ink squeezed through the fibres onto a piece of paper.

The beauty of today's stencil duplicators lies in the fact that not only have the machines themselves been constantly improved, but every other phase of the operation has seen similar advances. More perfect stencils, yielding finer impressions have been developed; quick-drying inks that avoid the old headaches of smearing and offsetting are common; finer papers made to provide a better surface and produce an almost "printing press" look; auxiliary equipment to ease the task of preparing the job or finishing off a run.

The wide drum of this Old Town electric fluid duplicator will handle any copy up to 14 x 17 inches. Large fluid resevoir and reset copy counter are features of the machine.

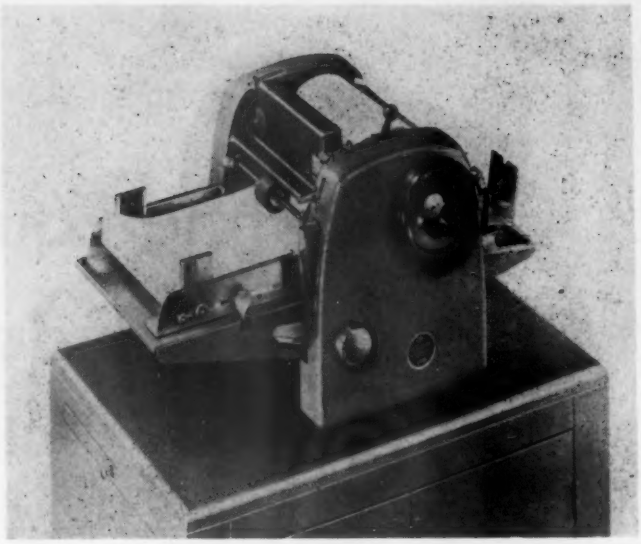


The "Continumatic", made by Gestetner Duplicator Corp., has an inking system that continually and automatically feeds paste ink to the machine according to a pre-set inking dial. A controlled delivery feature eliminates thin papers sticking to the stencil.





The unusual Dual-O-Matic Feed of this fluid machine of Standard Duplicating Machines Corp. makes it an extremely versatile tool. It will handle paper 18 x 14 inches.



This electrically-operated azograph duplicator made by A. B. Dick Co. handles any size paper from post cards to 9 x 14 inches. A single control shuts off feed, motor and readies master clamp for reloading.

All these, and many more, have moved the duplicator from the hidden corner in the stockroom to an open and valued position among the other quality office tools.

Interesting as these developments may be, the fundamental value of the equipment rests in the machines themselves. Fast and clean inking is one of the outstanding features on many of today's machines. The insertion of a cartridge, tube, or other device had practically eliminated the old messy job of hand-inking the machine's drum. With this have also come methods of controlling ink flow so that every impression has the same crisp black look as its predecessor. The days of the bleary black first impression and faintly visible last impression are gone.

Automatic feeds, counters and stackers have turned the simple hand-fed, hand-cranked machine into virtually a small office printing press. Output of 200 copies per minute on these automatic, electrically driven machines is not uncommon.

Even the hand operated duplicators bear little operational resemblance to earlier equipment other than their hand cranks. They load easier, feed better, turn smoother, ink nearly as efficiently as their electrically-driven "brother", and turn out quality work that more than answers the office's needs.

All these points contribute in a great measure to the overall value of the office mimeograph. This process is extremely versatile. It can handle many types of jobs efficiently and easily. Stencils can be prepared by typing or cutting with various styli. Thus nearly every type of short run business form can be produced right in the office. Also, in a modified form, the mimeograph can reproduce photos, etc.

Additional interest lies in the fact that with all the advantages and refinements on these high-speed machines, an ordinary office worker can run the equipment, produce quality work and go through every stage of the duplicating operation after only a few minutes "acquaintance" with the tools. As a matter of fact, with many of the automatic machines, it isn't even necessary to pay too close attention to the machine while it is running, as it will stop printing when the desired number of copies has been run off. Even such annoying problems as centering copy (a problem that used to waste many sheets of paper) can now be done quickly through control mechanisms built right into the equipment.

Another desirable asset is the fact that the office mimeograph can economically produce a few hundred copies to a few thousand. Also, after a run, the stencil can be cleaned, filed, and used over again if so desired.

Color, too, is practical and not too difficult or messy a job with today's "unit constructed" duplicators. There is no doubt that the modern mimeograph is an office production tool highly important to the well-run office.

Another duplicating method is the spirit or liquid type. Often, this is referred to as the aniline dye process. It is a rapid means of producing a few hundred copies of material where it is not necessary that the copies be permanent.

It basically consists of a master

Oscillating ink distributing rollers (using paste ink) plus automatic re-inking operation, are two features of this Danish-made machine handled by Rex-Rotary Distributing Corp.



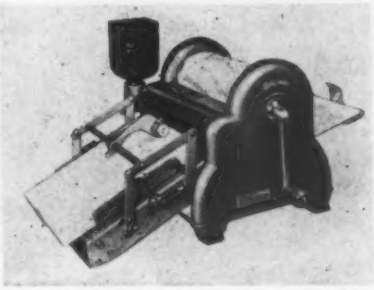
The "Geha Automat" is a dual-cylinder stencil duplicator with an air-blower for lint-free operation and a 500 sheet capacity in its feed tray. It is made by Milo Harding Co.



sheet backed up by a carbon coated with a special aniline dye facing the back of the master. The typed or drawn material is transferred to the back of the master by the carbon and an alcohol based fluid is used to transfer part of this deposit onto a sheet of paper.

Naturally, over a long run, the aniline deposit diminishes as each copy is printed, thus limiting the run of the process to a few hundred impression.

However, its speed of preparation and run make the liquid duplicator an important tool for those "immediate" and "rush" short-run jobs.



Three-way paper side guide adjustment and visible fluid supply are important features of the hand-operated "Copy-rite" liquid duplicator of Wolber Duplicator & Supply Co.

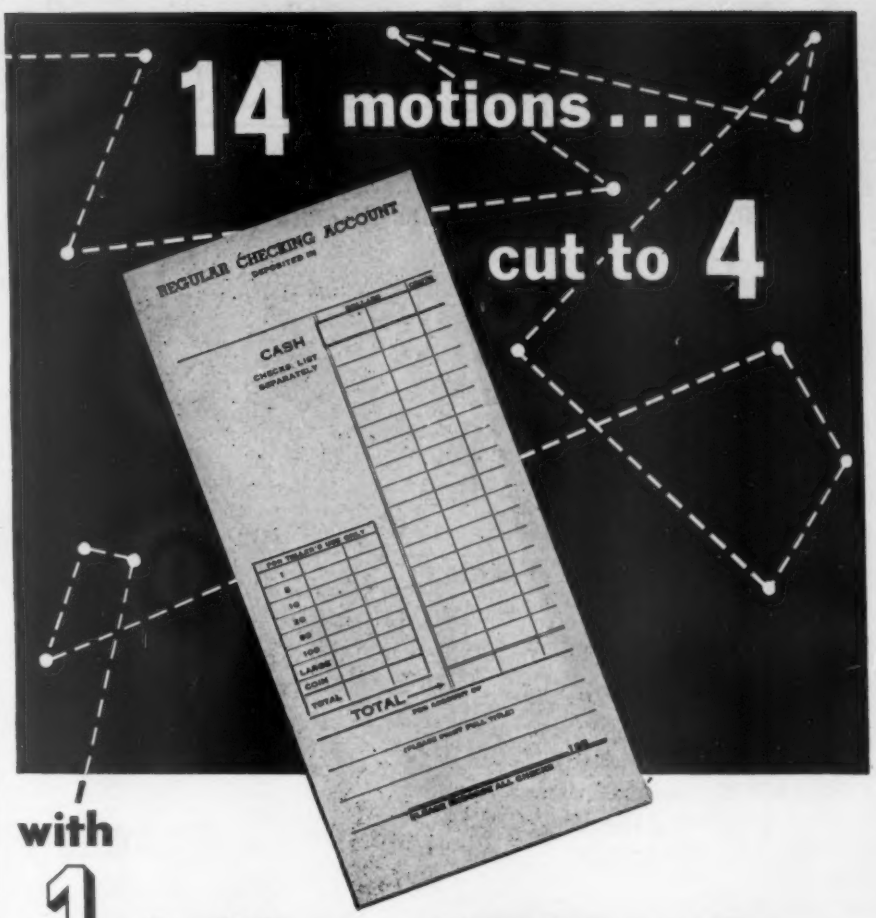
It is extremely valuable, also, as a means of duplicating in color. Normally, the spirit duplicator produces a purplish impression. However, by using various aniline carbons, the machine can readily produce a variety of colors during one run.

Like the mimeograph, these liquid duplicators are precision mechanisms whether in the hand or electrically driven model. It is an extremely good method for preparing small run forms because of the simple fact of drawing the form in pencil on the carbon backed master.

With the exception of the small, gelatin, hand-operated types, the degree of automatic control of liquid duplicators is on a par with the mimeograph. Reservoirs hold good supplies of the alcohol based fluid; automatic counters control stopping the printing run; feed and delivery is as fool-proof as on the other machines; and centering, too, is a problem handled directly on the equipment.

Just as in the stencil duplicator, fine quality accessories are available. Special masters to avoid, as much as possible, the staining of fingers, clothing, etc., during preparation of the master are readily available. In addition, special papers to provide the maximum brilliance in the alcohol transferred impres-

(*Please turn to page* 178)



with 1 **Baltimore Business Form**

Until a few years ago, most banking institutions used deposit systems that involved many separate operations—in some cases up to 14 distinct steps. Since then, bank after bank has turned to us to help speed up this time-consuming operation. Today, by adopting forms designed by Baltimore Business Forms experts, 4 motions take the place of the previous 14. Time and money is saved. Business is expedited.

WHAT'S YOUR PROBLEM?
Leading department and retail stores, wholesalers, delivery services, manufacturers, banks . . . all have found that Baltimore Business Forms save time, trouble and money. Why? Because Baltimore Business Forms are *designed* to fill specific business requirements.

Since 1916, Baltimore Business Form's design and manufacturing experts have solved countless problems in serving over 60,000 of the nation's leading business houses. Their wealth of experience ideally qualifies them to help you. Remember, often a single suggestion may save hundreds . . . even thousands . . . of dollars for your company. So, re-evaluate your present system in the light of today's constantly changing conditions. Call in Baltimore for help in solving your business forms problems.

BALTIMORE BUSINESS FORMS

Saving time and reducing costs in business and industry

The Baltimore Salesbook Company

The Baltimore Salesbook Company, 3142 Frederick Avenue, Baltimore 29, Maryland
We are interested in seeing samples of Baltimore Business Forms.
Name .....
Company .....
Type of Business .....
Address .....
City ..... State .....

For More Information Circle No. 204 on Inquiry Card—Page 17

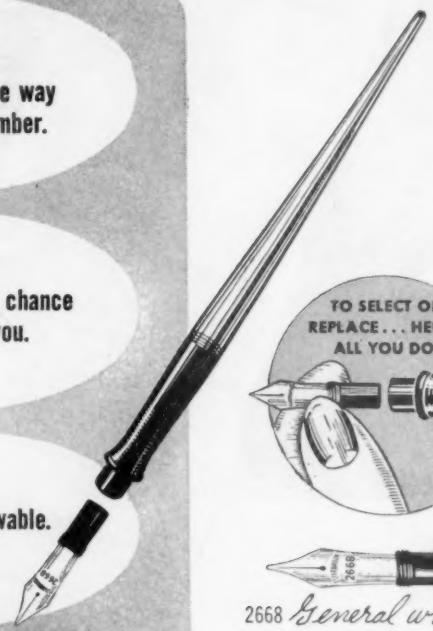
the Pen that fills itself

Fountain-base automatically fills pen every time pen is returned to socket. Pen writes full page or more at each filling.

Choose
the right point for the way you write . . . by number.

Finger grip never touches ink. No chance for ink to touch you.

Point instantly interchangeable and renewable. More than 28 point styles.





MODEL 444

Fountain-base "ink-locked" against accidental spillage. Only the pen unlocks the ink.

Fountain-base holds 40 times more ink than ordinary fountain pen. Won't leak. Won't flood. Easy to clean as a saucer.

2668 *General writing*


2442 *Fine Stub*


9550 *Extra Fine*


9314B *Broad Stub*


2556 *Fine writing*


9668 *General writing*


2284 *Signature Stub*


9460 *Medium Manifold*

Esterbrook® DESK PEN SETS

THE ESTERBROOK PEN COMPANY, CAMDEN 1, NEW JERSEY MADE IN U.S.A., CANADA AND ENGLAND

The Esterbrook Pen Company of Canada, Ltd.
92 Fleet Street, East; Toronto, Ontario

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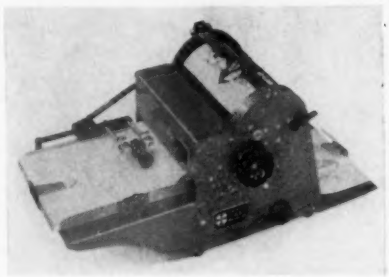
For More Information Circle No. 205 on Inquiry Card—Page 17

(*Continued from page* 177)

sion are a steady market stock.

A further advantage of spirit duplicating is its undeniable ease of operation. There is little to learn in handling a liquid duplicator.

Closely allied to the aniline process is a new patented development of the A. B. Dick Company called Azograph. Its similarity, however, lies solely in the fact that it uses the same basic equipment and methods of preparation and running. Its most important asset, however, is that it eliminates the staining of fingers, clothing, etc., associated with the aniline process.



"Micromatic" spirit duplicator of Copy-Plus, Inc.

Basically, it consists of using compounds and components for the formation of azo dyes to produce a deep blue impression. It chemically separates the two color forming compounds within the coating of the transfer sheet. These compounds cannot unite to form a color until a third element, a reactant in the fluid, is introduced in the duplicator. Thus the "purple stain" problem of the aniline process is eliminated while the other advantages of the process are retained.

It is a fast, short-run process (ideally suited for runs up to 50 copies although more can be obtained) and of extreme value where a number of people are required to handle each master. Its non-smear advantage is most important in this manner to provide absolutely clear, crisp copy.

As to the applications of these duplicators—mimeograph, liquid, or azograph—it is nearly impossible to list all their uses. Generally speaking, they are limited only by the imagination and ingenuity of their users. They are extremely versatile instruments, far more valuable than merely a device to turn out company bulletins. They can save many dollars through the preparation of many special forms. But, whatever their ultimate use is, the office duplicator has taken its place as one of the most valuable and desirable tools in today's high-speed high-pressure business.

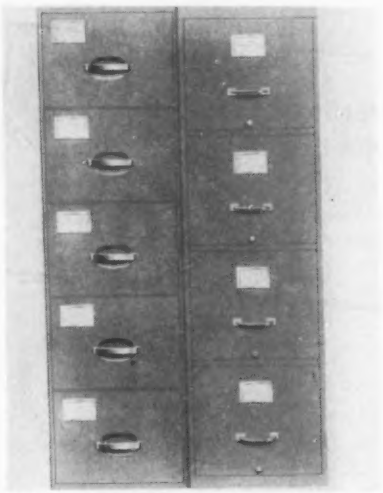


The Masco Econofone is being introduced by **Mark Simpson Mfg. Co., Long Island City 3, N. Y.,** to provide an economical, multiple station **intercom system.** The Econofone Master is normally supplied for up to 5 remotes which can originate calls to or receive calls from the master. Simple modifications change the Econofone into an All-Master system. Up to 6 Masters can be used in the All-Master system with up to 3 separate pairs of conversations or a conference of any group of stations possible. All units are U/L approved.

Circle No. 88 on Inquiry Card—Page 17

Klennie Master Co., New York City, is producing as pre-assembled **hectograph master** that has the hecto carbon in a protected position. Centered on the backing sheet, the carbon has clean edges surrounding it to prevent smearing and transfer of the ink.

Circle No. 89 on Inquiry Card—Page 17



"The file with the extra drawer" is the feature of the new line of Kompakt **file cabinets** made by **Remington Rand Inc. New York City.** The line is available in 3-drawer desk height, 4-drawer counter height, 5-drawer standard 51" height and new 6-drawer height, designed to accommodate an extra drawer in the same vertical space as standard files. By using the new 6-drawer unit, for example, in place of existing 4-drawer files, present filing area is reduced by one-third. A folder, LBV-692, describes the Kompakt line.

Circle No. 90 on Inquiry Card—Page 17

Prominent Users of Strathmore Letterhead Papers: No. 111 of a Series

The Shelburne, Atlantic City, N. J., whose tower and spire form a familiar landmark in America's popular seashore resort



QUALITY

is a permanent guest!

This is a year of more than usual festivity in Atlantic City. While the popular resort celebrates its own Centennial and the Electric Industry's Diamond Jubilee of Light, the renowned Shelburne celebrates its own 85th year of hospitality and service. Ideally located in the very heart of the famous boardwalk, The Shelburne is one of the most distinguished resort hotels, noted for the luxury of its appointments, cuisine, and service.

Indicative of its belief that only the finest will do, The Shelburne provides the same *quality* Strathmore stationery for its guests as that which it has long used for its own impressive business letterhead.

Your own letterhead, on a Strathmore Paper, will convey a similar message of prestige through your correspondence. Ask your supplier to show you samples of your letterhead design on Strathmore papers, and see for yourself the improved appearance achieved through Strathmore craftsmanship and *quality*.

STRATHMORE LETTERHEAD PAPERS: *Strathmore Parchment, Strathmore Script, Thistlemark Bond, Alexandra Brilliant, Bay Path Bond, Strathmore Writing, Strathmore Bond. Envelopes to match converted by the Old Colony Envelope Company, Westfield, Mass.*

NEW STRATHMORE THIN PAPERS: *Strathmore Parchment Onion Skin, Strathmore Bond Onion Skin, Strathmore Bond Air Mail, Strathmore Bond Transmaster.*

STRATHMORE

MAKERS OF FINE PAPERS

Strathmore Paper Company, West Springfield, Massachusetts

For More Information Circle No. 206 on Inquiry Card—Page 17

Columbia CLASSIC
CARBON PAPER



NEW **Cleanliness**

No "stenographer's stain"—Classic is so clean to handle.

NEW **Sharpness**

Classic gives such crisp copies that you'll never hesitate to send out carbons of your forms or memos.

NEW **Tissue**

Paper stock is vastly improved—highly absorbent and extremely durable—perfectly bodied for uniform impressions.

NEW **Ink Formula**

Columbia developed a brand new ink formula for Classic. It gives brilliant, black copies, shows no feed roller marks and is practically smudge-proof.

NEW **Versatility**

Classic is available in the weights and finishes required to fit 90% of all carbon paper needs.



The Columbia stationer in your neighborhood will gladly demonstrate all the things that are better about Classic. Phone him. Meanwhile, send for your free copy of the Columbia illustrated reference book for ribbon and carbon users.

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Send the ribbon and carbon reference book.

Name_____

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Address_____

City_____

Zone_____ State_____

For More Information Circle No. 207 on Inquiry Card—Page 17



A low-cost **microfilming machine** for office use which combines recording and reading in one compact, portable unit has been announced by **Burroughs Corp., Detroit and the Bell & Howell Co., Chicago.** Manufactured by B&H and sold by Burroughs, it is called the Micro-Twin. It will record documents smaller than bank checks up to single sheets 11 inches wide and 3,700 feet long, photographing both sides. It is 13½ inches high, 23 inches deep and 32 inches wide. The reader screen is 8 x 11 inches. A safeguard alarm sounds if an operator tries to record with improperly loaded film and the machine will not operate if the lens is not in the recording position. Another guard protects against lamp burn out.

Circle No. 91 on Inquiry Card—Page 17

A new booklet containing a detailed and comprehensive listing of dry-developed print making papers, reproduction cloths and films, semi-moist direct process papers, sepia tone negative and brown line papers, plus related developer chemicals, eradicators, etc., is now available. Copies can be obtained from **Frederick Post Co., 3650 N. Avondale Ave., Chicago 18.**

Circle No. 92 on Inquiry Card—Page 17

A new **pen point,** called Renew-Point, has been announced by the **Esterbrook Pen Co., Camden, N. J.,** for their fountain pens and desk sets. The point, No. 9555, is a firm, fine point designed to specifications for Gregg writing and has been approved by the Gregg system. A similar point, No. 1555, also Gregg approved, has the same general action, but is made without the hard pellet point.

Circle No. 93 on Inquiry Card—Page 17

A new, fully-automatic attendance **time recorder** has been announced by **International Business Machines Corp., New York City.**

Circle No. 94 on Inquiry Card—Page 17

"Miss Miggins, The Wolf,—and Red Writing Hood" is the title of a 12-page booklet produced by **Interchemical Corporation, Ault & Wiborg Carbon & Ribbon Division, Cincinnati.** It explains how the use of A&W's special carbon paper manifolding system eliminates handling of loose carbons and eases the secretary's job.

Circle No. 95 on Inquiry Card—Page 17

THE SUGGESTION BOX . . . by Ajax



Perhaps your employees won't take such drastic steps — but they will appreciate the ease and convenience of *complete* drinking water service.

Complete drinking water service, including AJAX or AERO Paper Cups and dispensers, improves employee morale because it provides clean, sanitary, comfortable and natural drinking facilities . . . cuts down absenteeism because it reduces the hazard of transmitted infection. Eight out of ten people prefer it. Ask your paper merchant.



AJAX® PAPER CUPS
DISPENSERS
CUP FILLERS

UNITED STATES ENVELOPE COMPANY
General Offices: Springfield 2, Mass.
15 DIVISIONS FROM COAST TO COAST



Also COLUMBIAN and PEERLESS Flat Cups

It pays to deal with the distributor who carries the complete line of paper water drinking cups. C2-H

For More Information Circle No. 208 on Inquiry Card—Page 17



Added to the line of Swedish-made **calculators** handled by **Facit, Inc., New York City,** is a compact, hand-operated, 10-key model. Called the NTK, it weighs only 12 lbs and comes in a handsome, simulated leather, plastic travelling case. It will handle addition, subtraction, multiplication and division. It is 5⅝" high, 11¾" wide and 7¼" deep.

Circle No. 96 on Inquiry Card—Page 17



A new **metal desk** in the improved Streamliner Series has been announced by **Globe-Wernicke Co., Cincinnati.** It features nylon glides or box drawers, progressive suspension slides for filing drawers and sound insulation for pedestals and back. It has a rigid, welded steel frame with a one-piece body wrapped around to form the sides and back. It is available in six colors.

Circle No. 97 on Inquiry Card—Page 17

Additional information on these latest developments in the office equipment field can be obtained by using the reader service postcard on page 17. Just circle the corresponding numbers and complete information will be forwarded to you.

at least **1** *pencil sharpener*

centrally located

for every **5** *office employees*





induces increased efficiency through convenience of location to employees' use. Improves work and MOST IMPORTANT, employee moral. Supervised experimentation and unsolicitated testimonials definitely prove the soundness of this plan.

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Fidelity
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For
THIN LETTERHEADS
COPIES
RECORDS FORMS

Send For Samples

ESLEECK MANUFACTURING CO.
Turners Falls, Mass.

For More Information Circle No. 210
on Inquiry Card—Page 17

Fresh copy that cannot smudge is possible with a new pen or pencil **carbon paper** produced by **Burroughs Corp., Detroit.** Called "Nu-Kote", it is being marketed by Burroughs' New Jersey subsidiary, Mittag & Volger. It is available in blue, black and red.

Circle No. 98 on Inquiry Card—Page 17



Regna Cash Registers, Inc., New York City, has announced a new **adding machine.** The Norwegian-made machine features a self-adjusting paper feed to restore the tape to perfect alignment when pulled out of line, a fully-automatic safety keyboard and a correction key to clear the entire keyboard.

Circle No. 99 on Inquiry Card—Page 17

Royal Typewriter Co., Inc., New York City, has announced the opening of a new Royal branch office in Chicago, and several managerial changes in its sales organization. The new office is at 3709 W. 63rd St., and is managed by J. S. Kenny, formerly district manager at Minneapolis. Named to succeed Mr. Kenny at Minneapolis is R. O. Shelby, one time district manager at Wichita, Kans. Also named to a district manager's post is John Schultz, who will handle the Flint, Mich., area. In New York, the company has named two new group managers; William Goldstein and Joseph Foley.

Chart-Pak, Inc., Stamford, Conn., has published a 16-page brochure describing the Chart-Pak method of preparing statistical charts, organization charts and office layouts. Copies are available on request.

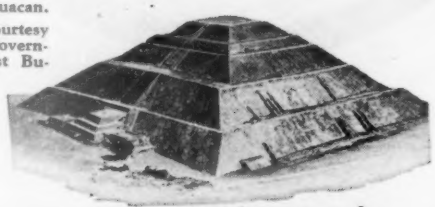
Circle No. 100 on Inquiry Card—Page 17

Seating, Inc., Minneapolis, has appointed W. C. Westberg as sales manager and Woodrow Wilson as treasurer. Mr. Westberg was formerly assistant sales manager and Mr. Wilson had been plant manager for the company.

USE
INQUIRY CARD—PAGE 17

GO PLACES with Weldon Roberts Erasers

Pyramid of the Sun, Teotihuacan.
Photo Courtesy Mexican Government Tourist Bureau.



You Should Know about MEXICO

With Mexican color and grandeur there's also *tradition* — and this includes *erasing!* Mexicans and people the world over who insist upon cleanest, fastest erasing, create the universal demand for Weldon Roberts Erasers which *Correct Mistakes In Any Language.*

These finest, most uniform erasers are made in STYLES, SIZES and TEXTURES for all your erasing requirements. *Ask your dealer.*



JET ERASER
Convenient, cylindrical stick eraser in attractive, transparent plastic holder. Tip unscrews so eraser stick can be moved outward. Red rubber for pencil erasing, gray rubber for ink. Pocket clip style for general use. Brush whisk style for typists. Refills. Tops for typing, accounting, drafting and professional use.

WELDON ROBERTS RUBBER CO.
365 Sixth Avenue Newark 7, N. J.
World's Foremost Eraser Specialists

Weldon Roberts Erasers
Correct Mistakes in Any Language

For More Information Circle No. 211 on Inquiry Card—Page 17

Every Purchasing Agent Should Have This Book

"Profiting From Industrial Standardization"—
$5.50

By Benjamin Melnitsky
Foreword by Stuart F. Heinritz

You will find complete and down-to-earth information on materials standards and specifications . . . purchasing, process and finish specifications . . . parts standards . . . manufacturing standards . . . design practice standards . . . proper review intervals . . . and on through the entire subject of how your company can benefit from a standards program.

How to use tested methods to develop and revise standards—how to organize and use a nomenclature system—how to allocate standards activities, responsibilities and authority—how to organize company standards—all these and more are explained thoroughly and concisely in this practical guidebook to industrial standardization.

Free 10-day Examination

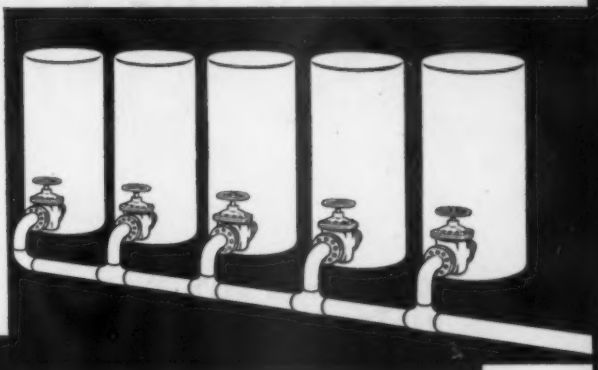
CONOVER-MAST PUBLICATIONS, INC.
Book Division
205 East 42nd Street, New York 17, N. Y.

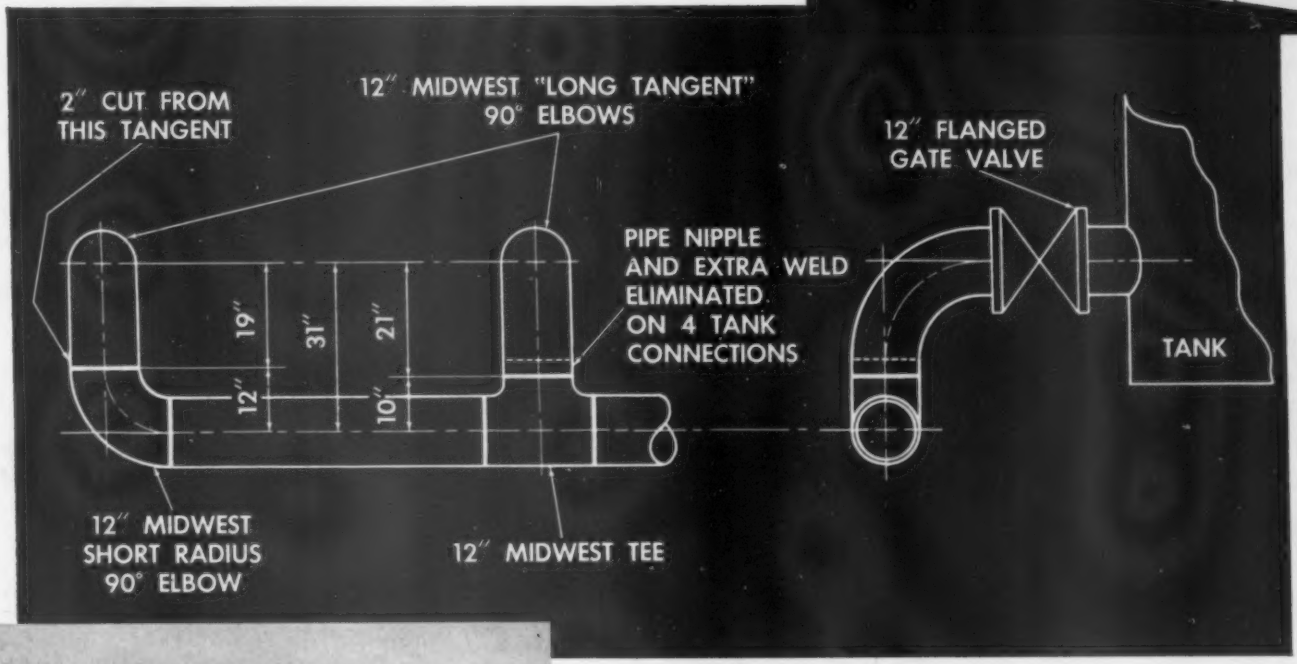
For More Information Circle No. 212 on Inquiry Card—Page 17→

MIDWEST "LONG TANGENT" ELBOWS

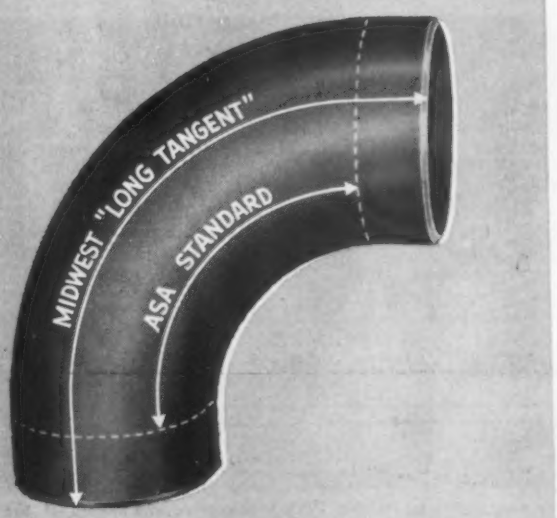
SAVED $156.20

On This Welding Piping





MIDWEST "LONG TANGENT" ELBOWS COST NO MORE THAN OTHER ELBOWS



The Problem:

To connect the five tanks shown in the sketch at top to a common 12" header.

The Difficulty:

The center-to-outlet dimension of the 4—12" tees is only 10", while the shortest elbow available measures 12" center-to-end, Thus, if standard long radius elbows are used next to the five tank valves, four short nipples and four extra 12" welds would be required.

The Solution:

By using Midwest "Long Tangent" elbows as shown in the blueprint, the expense of the four extra nipples and welds was eliminated at the cost of just one cut! The actual net savings made by "Long Tangent" elbows on this job was $156.20.

Remember—Midwest "Long Tangent" elbows cost no more than regular elbows! For further information, write for Catalog 54.

MIDWEST PIPING COMPANY, INC.

Main Office, 1450 South Second St., St. Louis 4, Missouri

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SALES OFFICES: NEW YORK 7—50 CHURCH ST. • LOS ANGELES 33—520 ANDERSON ST.
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6820

MIDWEST WELDING FITTINGS IMPROVE PIPING DESIGN AND REDUCE COSTS

AMONG THE Associations



Old Dominion Ass'n Has Two Day Meeting

The Homestead in Hot Springs, Va. was the scene of the summer meeting of the Old Dominion Purchasing Agents Association. Activities commenced on Friday July 16 with a tour of Virginia Hot Springs Inc. Following committee meetings, members attended an evening banquet. Featured speaker was Major-General W. H. Milton, Jr., superintendent, Virginia Military Institute. His topic was "General Management of an Institution of Higher Learning." Festivities for the day concluded with dancing.

Highlight of the second day was "A Check List for Better Purchasing." The speaker was P. J. Clarke, director of purchases, Rohm and Haas Co., Philadelphia. A forum discussion followed Mr. Clarke's address. It was led by Dr. E. M. Last, School of Business Administration, University of Richmond. Members then relaxed the balance of the day and enjoyed the Homestead's facilities for golf, tennis, horseback riding, etc.



Stanley MacKenzie, right, newly elected president of the Purchasing Agents Association of New York, expresses the group's appreciation for the fine job done by the outgoing president, M. D. MacBurney. Other officers are: Edward M. Krech, first vice-president; Frederick C. Esser, second vice-president; Edward B. Fielis, treasurer; and J. H. Leonard, executive secretary.

* * *

Reading Ass'n Installs New Officers

Newly-elected President Kenneth C. Shugars was installed as head of the Reading Purchasing Agents Assn. by Edward Crewes, retiring president.

Wesley Ford, who was installed as national director during the meeting, reported on the recent national convention in Chicago. Three prospective members were introduced. They were Clarence M. Rowe and Russell Graham of Pottstown, and Kenneth E. Peet, of Pine Grove.

The group noted the ninth annual picnic will be held on Aug. 23 at Silver Swallow Club, near Five Points.

Other officers installed were: Leroy F. Groff, vice president; Paul A. Mory, secretary-treasurer; Ford, national director, and Robert E. Reddy, Joseph Keleman and Richard A. Behrenhausen, directors.



Past presidents of the Purchasing Agents Association of New York at pre-meeting reception honoring N.A.P.A. President Howard Ahl and President-elect Stanley MacKenzie. Standing, left to right, are John Snedeker, M. D. MacBurney, and Ed Bantel. Sitting are Howard Ahl, Harold Macintosh, Parke Lamborn, and Harold LaRowe.



Meeting for the first time is the 1954-5 executive committee of the Purchasing Agents Association of New York. Standing, left to right, are David S. Gibson, William H. Old, William F. Rae, J. H. Leonard, Lewis A. Norris, John R. Zehner, and C. W. Goodman. Seated are M. D. MacBurney, Ed Krech, Stanley MacKenzie, Frederick C. Esser, and Edward B. Fielis.



POWER PACKED ACTION for Today's Industrial Trucks

THANKS TO BATTERY POWER!



Specify
THE GOULD "THIRTY
with New Diamond "Z" Grids—
America's Finest
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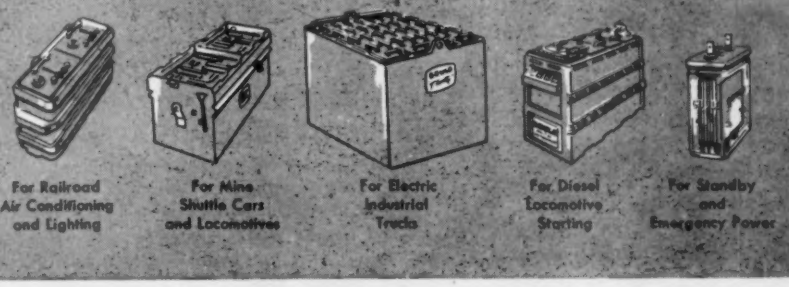
The faster maneuverability of today's industrial trucks requires an unfailing source of power . . . battery power to keep them continuously on the go with a minimum of downtime and maintenance. No power can compete with battery power for utmost dependability, low cost of operation and power-packed, full-shift performance. Nothing can compare with the Gould "Thirty" with Diamond "Z" Grids, either. Brim-full of power-packed action, it gives you the lowest-cost industrial truck power you can buy.

Always Use Gould-National Automobile and Truck Batteries

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For Railroad Air Conditioning and Lighting | For Mine Shuttle Cars and Locomotives | For Electric Industrial Trucks | For Diesel Locomotive Starting | For Standby and Emergency Power

For More Information Circle No. 213 on Inquiry Card—Page 17

Wisconsin Chapter, NIGP Meets at Oshkosh

The quarterly meeting of the Wisconsin Chapter, National Institute of Governmental Purchasing, was held at the City Hall, Oshkosh, June 11th, with representatives from Milwaukee, Wauwatosa, Eau Claire, Sheboygan, Racine, West Allis, and Kenosha attending. Maynard P. Sonn of the Wadhams Division, Socony-Vacuum Oil Company, spoke on lubricating oils, explaining the new service classifications and the use of additives and detergents for special properties and conditions.

Gil Guetzkow, who represents the Milwaukee city purchasing department in liaison with Washington agencies, reported on the pending bill which would make Federal defense production facilities taxable to the same extent as if privately owned. He also discussed the probability of having Federal funds made available for housing and school construction, as well as matching municipal funds for approved civil defense activities.

William Boyd of the Milwaukee Board of School Directors, which has a purchasing department of its own, separate from the City's central Board of Purchase, led a discussion on storehouse procedures and problems. In his introductory statement he stressed the economy and efficiency of properly designed storehouse buildings, calling attention to the trend toward one-story construction to simplify materials handling.

Other topics discussed included long-term buying, consolidated purchasing for quantity price advantage, identical bids, and the requirement of deposits for blue prints on construction projects.

The next meeting will be held at West Allis, on September 24th.



Long-term buying, consolidated purchasing for quantity price advantage and many other pertinent topics were discussed by these members of the Wisconsin Chapter, NIGP, during the quarterly meeting in Oshkosh.

Corning Exec Talks at Southern Conn. Meeting

Featured speaker at the June meeting of the Southern Connecticut Purchasing Association was Ralph Baker, general purchasing agent, Corning Glass Works. After the showing of a color film describing the glass making process, Mr. Baker described the contribution purchasing makes to Corning management. He also outlined how his department was organized.

New officers elected at the previous meeting of the association are: James A. Miller, president; W. R. Ferguson, first vice-president; George P. McShane, second vice-president; George W. Glynn, treasurer; and Clifton W. Boylan, secretary.

Detroit Ass'n Forms Women's Group

Mrs. Helen Kenney is the first president of the Women's Division of the Purchasing Agents Association of Detroit. She is assistant purchasing agent of Ryan Industries, Inc. She heads a group numbering 36 members. Other officers installed at charter ceremonies are: Mary Popovich, first vice-president; Florence Sloan, second vice-president; Eileen Lane, recording secretary, and Agnes Sickelsteel, treasurer.

Toledo Ass'n Has Double Feature Program

First feature of the June meeting of Toledo Association of Purchasing Agents was a talk "European Vacation" by Past President Vern Kellermeyer. After seeing the slides which accompanied the talk, many a Toledo PA yearned for parts beyond the confines of the Maumee River. Second feature was "How We Stand with the National." Handling this end of the program were National Director Norm Earley and President Frank Sayre.

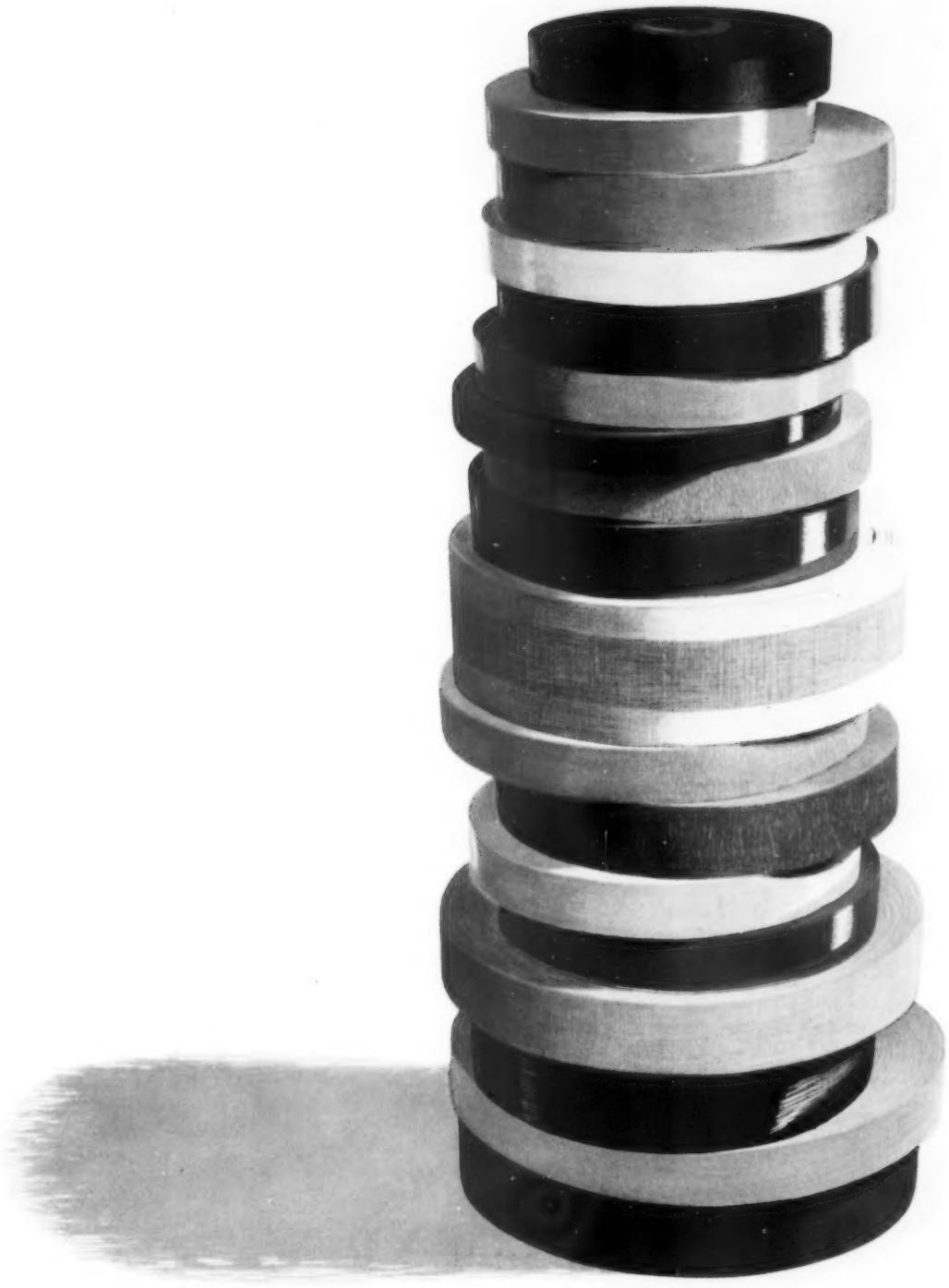
In July, the Toledo Ass'n held its annual golf party at Highland Meadows. Arrangements were ably handled by Paul Weaver, Max Thayer, and their committee.





Winner of the George E. Henry Memorial Award is William Nagel of American Brake Shoe Co. Named for the late associate editor of PURCHASING, the award is presented annually by the Metropolitan Purchasers' Assistants Club to one of its members. It consists of a course in purchasing at any university in the New York area.

Newly elected officers of the Metropolitan Purchasers' Assistants Club are, l. to r.: Robert Miller, president; Harold Hill, vice president; George Stapleton, secretary; and Paul Tintera, treasurer.



whatever the job . . .

SELF-STICKING

PERMACEL® TAPES

In our complete line, there's a self-sticking tape for every job . . . write Permacel Tape Corporation, New Brunswick, N J



PIASECKI HOOKS ON TO

SAFETY WITH LAUGHLIN

From Thule to Tahiti versatile Piasecki helicopters are building a new tradition of usefulness and dependability. It's the kind of service where equipment has to be right—*all the time*. That's why Piasecki looked to Laughlin as the logical source for the swivel safety hooks used on the end of lifting and rescue cables in both rescue and workhorse helicopters.



These Duronze #3 safety hooks are non-sparking, have silicon bronze spring, bolt and latch, provide 90,000 lbs. ultimate tensile strength/sq. in. and are available from stock. Because the latch locks the load, it *can't* jolt off accidentally.

More and more safety- and economy-minded manufacturers are learning that Laughlin is their best source for quality drop forged fittings for wire rope and chain. Over 1500 types and sizes immediately available from stock make ordering easy.

Why not ask your supplier salesman to show you how Laughlin products can help in your business? Or write for new Catalog No. 155.

For Safety's Sake say

LAUGHLIN THE FULL LINE OF WIRE ROPE AND CHAIN FITTINGS

The Thomas Laughlin Company, 84 Fore St., Portland, Maine



For More Information Circle No. 214
←on Inquiry Card—Page 17

Springfield Ass'n Chooses 1954-5 Officers

James Brannan of the Steel Products Engineering Co. has been elected president of the Springfield Purchasing Agents Association. He succeeds Owen Garlough of Schaeffer's Bakery.

Other newly-named officers are: Robert A. Harley, Robbins and Myers, Inc., vice-president; E. E. Forrer, Springfield City Schools, treasurer, and George Merkle, Patton Manufacturing Co., secretary.

Directors include Harry C. Laybourne, Springfield Machine Tool Co.; Louis H. Fitch, Wittenberg College; George Stelzer, Howard Paper Co.; Richard L. Green, Peters and Russell, and Fred T. Wilson, Thompson Grinder Co.

* * *

Tri-State Ass'n Elections

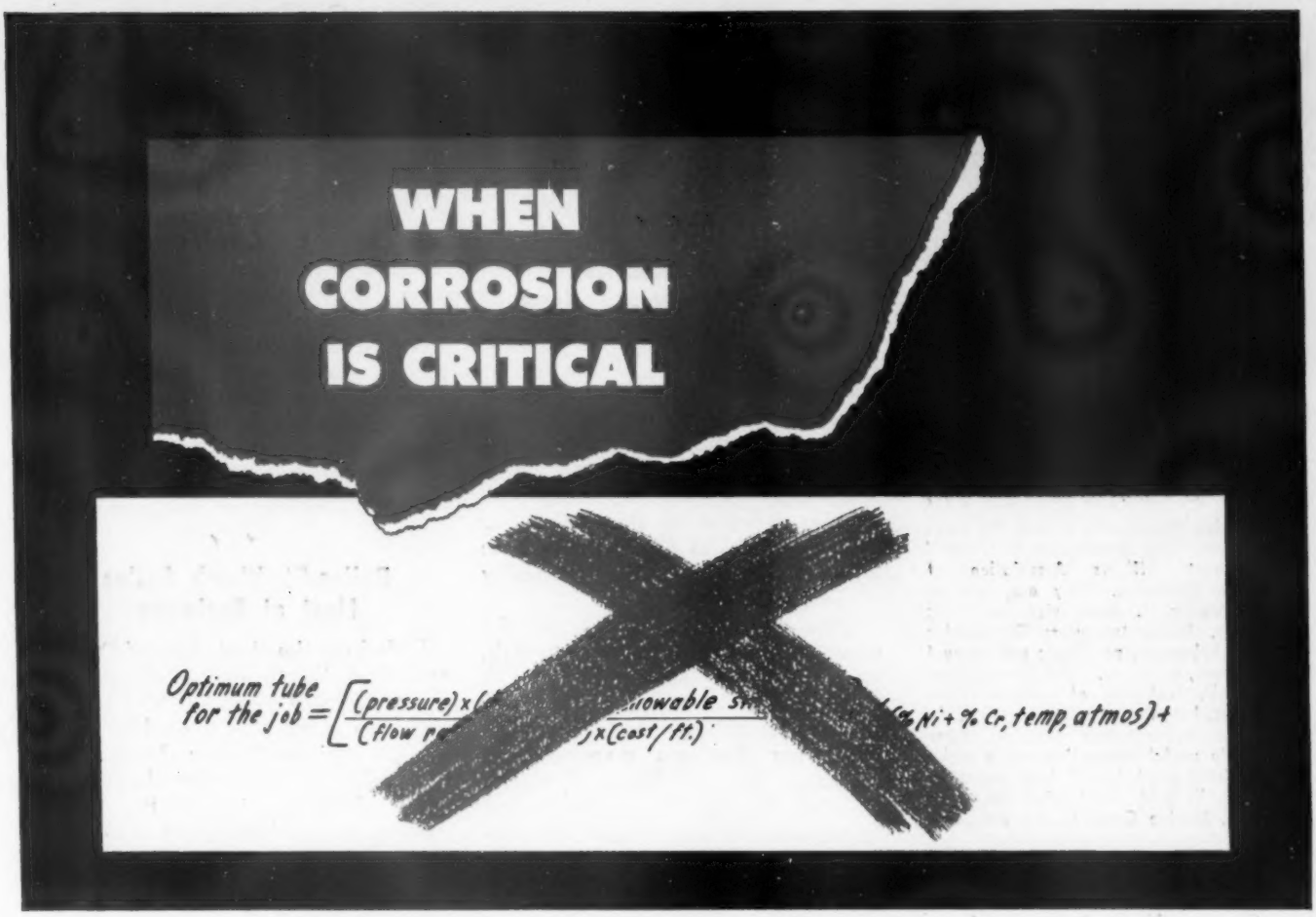
Members of the Tri-State Purchasing Agents Association recently chose their 1954-5 officers. R. J. Thompson of Owens, Libby-Owens is the new president. Serving with him are: T. H. Evans, Jr., The McBee Co., first vice-president; C. H. Richardson, Medical Arts Supply Co., Huntington, W. Va., second vice-president; A. A. Meyer, secretary-treasurer; C. G. Roll, Armco Steel Corp., national director.

Newly elected directors are B. G. Ferguson, H. L. Pugh, and J. K. Barron. The balance of the board will consist of holdovers L. W. Donahue, A. C. Parsons, and G. H. Trumbo.



Miss Robbye McWhorter is the new president of the Women's Division of the Purchasing Agents Association of Chicago. She is PA of Chicago's Permoflux Corp. Other 1954-5 officers are: Mrs. Mary Perrie, Alsco-Gravure Div. of Publications Corp., vice president; Miss Jacqueline Liss, Chas. A. Stevens & Co., secretary; and Mrs. Olga Shea, Armour Research Foundation, treasurer.

For More Information Circle No. 215
on Inquiry Card—Page 17



Tube Selection Cannot be Reduced to a Formula

—even a complicated one

Selection of the proper grade of stainless steel for a particular application is a relatively complex problem and involves manufacturing, metallurgical, chemical and economic considerations. Although it is complex it has been made easier by industrial research. Data accumulated through years of research and experience gained in helping to solve varied application problems are now available to guide the user in the solution of his present problems.

It is practically impossible to list all the media in which stainless steels will resist corrosion. It is even more difficult to enumerate all the conditions under which the stainless steels will resist effectively the corrosive effects of such media. Frequently, a relatively minor contaminant, when combined with the main reagent, will cause a more detrimental corrosive action than the latter by itself. This is particularly true of iron salts which, in the presence of chlorides, often prove to be a very potent corrodent, producing pitting.

It is always advisable to test a sample under actual operating conditions, especially before extensive untried installations are made. Proper tube selection starts with expert opinion, available to you through Mr. Tubes, your nearby B&W Tube Representative. There is no substitute for the kind of experience with pressure tubing problems you'll find at B&W. Ask Mr. Tubes for help in matching tubes to jobs.

THE BABCOCK & WILCOX COMPANY
TUBULAR PRODUCTS DIVISION
Beaver Falls, Pa.—Seamless Tubing; Welded Stainless Steel Tubing
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B&W SEAMLESS and WELDED TUBES

TA-4061(P)

For More Information Circle No. 216 on Inquiry Card—Page 17



Official Photograph U.S. Navy

Installation of new officers was the highlight of the June meeting of the Federal Procurement Officers Association of Northern California. They are, left to right: Walter H. Dorn, vice president; Helen O. Sears, treasurer; Commander John B. Robertson, president; and Samuel C. Eastburn, secretary. Guest speaker was Charles V. Jenkinson of Federal Prison Industries, Inc., Department of Justice. He described how federal prisoners were trained in useful occupations while making products needed by federal agencies. Major G. K. Reid also briefed the group on U. S. Marine Corps buying practices.

Craven Named Head of Western Mass. Ass'n

Elmer E. Craven of Chemical Paper Manufacturing Co., Holyoke, was installed as president of the Purchasing Agents' Association of Western Massachusetts, Inc., at a dinner meeting in the Sheraton Hotel.

Other officers installed were: first vice-president, Raymond W. Lawson, Package Machinery Co., East Longmeadow; second vice-president, A. L. MacLean, Stanley Home Products, Inc., Easthampton; secretary-treasurer, Carl C. Carlson, Hampden Color & Chemical Co.; national director, George Romieu, Bigelow-Sanford Carpet Co., Thompsonville.

A former president of the national association, George P. Brockway, discussed "Purchasing through the years," describing how top management became increasingly aware of the importance of purchasing departments and the need to keep in touch with their activities.

He told how subcontracts, which in many cases had been handled by other executives, gradually are coming under control of purchasing departments.

Brockway, who retired recently as director of purchases for the American Optical Co. in Southbridge, had this advice: "The first thing a purchasing executive must learn is never do anything you can get someone else to do." He explained that the department's work load should be charted to be distributed efficiently."

New Columbia Ass'n Selects Temporary Head

Grayson C. Meetze will serve as temporary president of the newly-formed Columbia Purchasing Agents Association, following his election at an organizational meeting of the group.

Serving with Mr. Meetze, purchasing agent at the South Carolina Electric and Gas Co., will be Miss Anna S. Durham of the University of South Carolina.

Other purchasing agents in the organization are Wade H. Hannah, city purchasing agent; Thomas T. Scala of the Lock Joint Pipe Co.; Lauren W. Shelley and Claude W. Connolley, business manager and assistant of the State Hospital; Charles W. Sutton of Huckabee Transportation Co.; James R. Caldwell of Columbia Hospital; Thomas H. Hewitt, State Highway Department supply equipment engineer; John Hehl of Columbia Bible College; Robert King, state purchasing agent; Delford F. Furney of the State Forestry Commission; and A. M. Dixon of Pacific Mills.

Central Mich. Ass'n Elects 1954-5 Officers

Malcolm R. Stuart is the new president of the Purchasing Agents Association of Central Michigan. He has previously served the association in other capacities including the office of vice president. He is PA of Abrams Instrument Corp. of Lansing. Other officers installed at the June meeting were: Harold Minnis, first vice president; Jim Shapiro, second vice president; Fred Adams, secretary; and Oscar Blost, treasurer. Following installation of officers by Loris Russell, Leonard Butters delivered a report on the Chicago convention.

Dallas-Ft. Worth Ass'ns Meet at Barbecue

PA's from the rival cities of Dallas and Fort Worth had a chance to get acquainted recently. The occasion was a western style barbecue at the Briggs-Weaver Machinery Co. lodge at Grapevine Lake.

The June meeting of the Purchasing Agents Association of Dallas featured reports on the N. A. P. A. convention. Delivering them were John Guynes, Dan Barr, and Dan Miller. New members welcomed included M. O. Flemmons of the Bosco Bolt, Nut & Screw Co. and William H. Montgomery of Johnson & Johnson Co.

Charting the Lehigh Valley Course

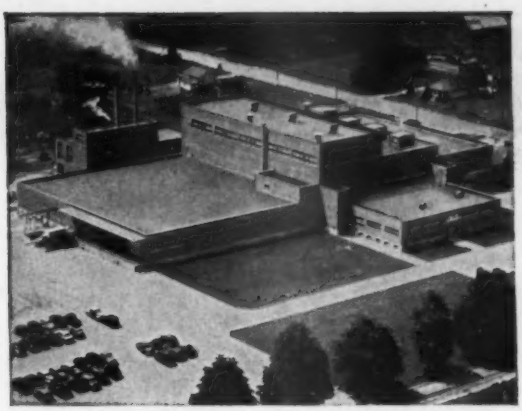


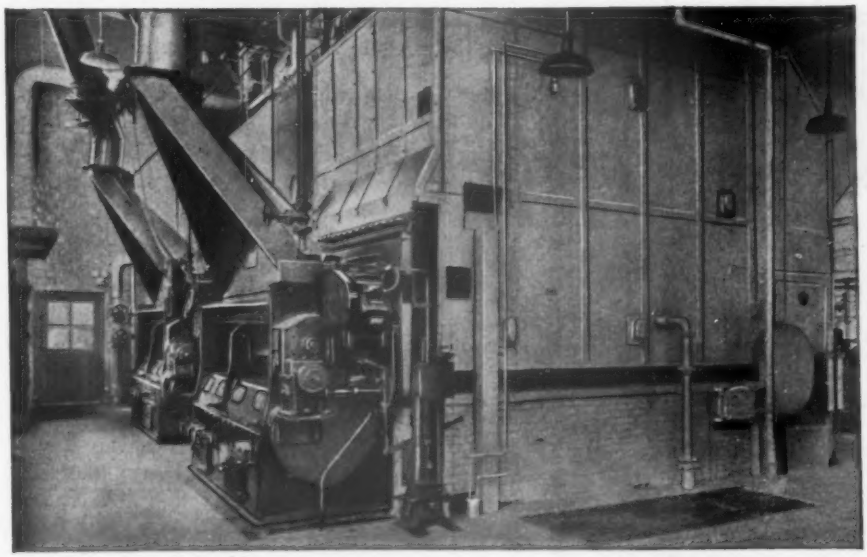
Lehigh Valley officers plan 1954-5 program. They are, left to right; Louis R. Albright Jr., president; Ralph W. Mutchler, vice president; Carl B. Reichard, national director; and Kenneth B. Shook, secretary-treasurer. Named directors at the annual meeting of the Purchasing Agents Association of the Lehigh Valley were Leon Kellow, William H. Schon, and J. J. Raub. Welcomed at this meeting were new members Richard C. Ware of Murlin Manufacturing Co. and Harold H. Hammel of Sarco Manufacturing Co.

"COAL'S BEST FOR OUR MODERN PLANT!

It's low in cost . . . It's clean and convenient!"

says G. W. Peters, Engineering Manager
M&R DIETETIC LABORATORIES, INC.
makers of PREAM & SIMILAC





"We made a careful study of fuels and burning equipment before building our modern new plant in Sturgis, Michigan. This plant was designed to produce baby food. So the steam plant has to be clean and dust-free as well as economical to operate. Also, we wanted a fuel we could store safely and easily in order to insure ourselves against any shortages.

"We decided on bituminous coal—and the up-to-date installation shown here. It certainly fills the bill on every count. Our modern combustion equipment makes coal far more economical than any other fuel. Up-to-date coal and ash handling give us convenient operation completely free of dust nuisance."

Additional case histories, showing how other types of plants have saved money by burning coal the modern way, are available upon request.

Discover for yourself the great advantages of coal burned the modern way. Call in a consulting engineer. He'll show you how today's combustion equipment can give you 10% to 40% more power from a ton of bituminous coal than from equipment used only a few years ago. He'll show you how modern labor-saving coal and ash-handling equipment make a coal-fired installation clean, convenient, and dust-free.

If you plan to remodel or build a new plant, be sure to look into the low cost and convenience of bituminous coal. Consider coal's other advantages, too. It has reserves that are virtually inexhaustible. America's bituminous coal mining industry is the most efficient and productive in the world. With bituminous coal, you can be sure of plenty of fuel at relatively stable prices now and for years to come.

If you operate a steam plant, you can't afford to ignore these facts!

BITUMINOUS COAL in most places is today's lowest-cost fuel, and coal reserves in America are adequate for *hundreds of years to come.*

COAL production in the U.S.A. is highly mechanized and by far the most efficient in the world.

COAL prices will therefore remain the most stable of all fuels.

COAL is the safest fuel to store and use.

COAL is the fuel that industry counts on more and more—for with modern combustion and handling equipment, the inherent advantages of well-prepared coal net even bigger savings.

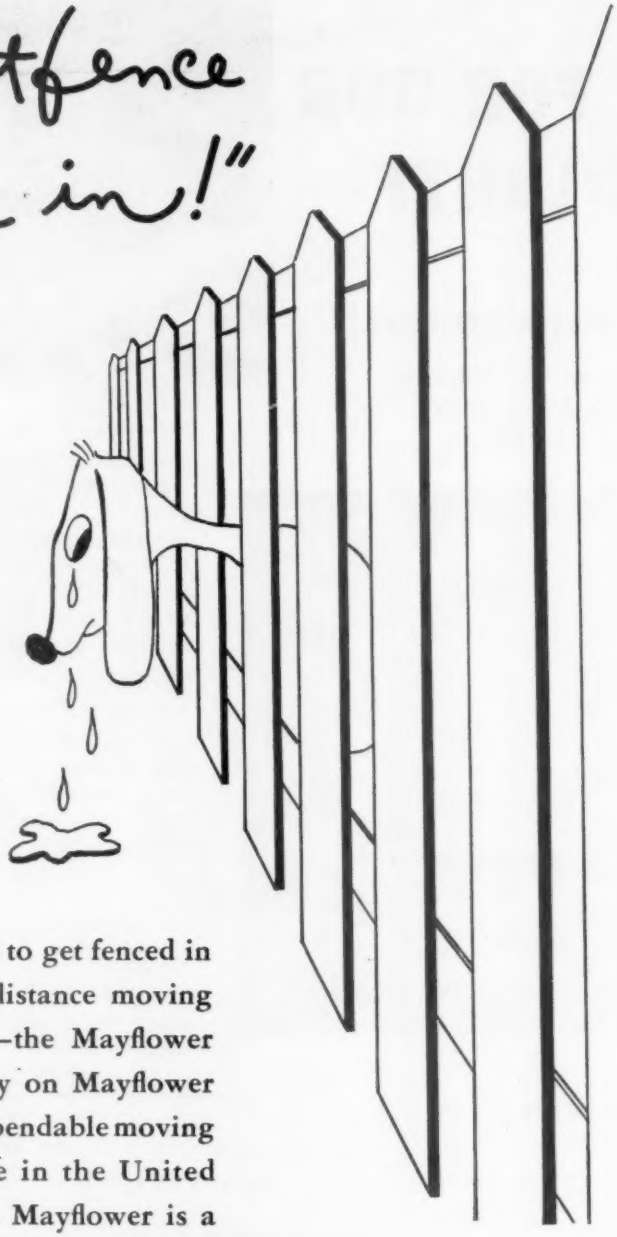
BITUMINOUS COAL INSTITUTE
A Department of National Coal Association
Southern Building, Washington 5, D. C.

FOR HIGH EFFICIENCY FOR LOW COST

YOU CAN COUNT ON COAL!

For More Information Circle No. 217 on Inquiry Card—Page 17

"Don't fence me in!"



▶ There's no need to get fenced in nowadays. Long-distance moving is easy and safe—the Mayflower way. You can rely on Mayflower for prompt and dependable moving service anywhere in the United States or Canada. Mayflower is a strong national company, operating the world's largest fleet of company owned, modern moving vans. Mayflower assumes full responsibility for the safety of the furniture from start to finish of a long distance move. Whenever, wherever you want to move, use Mayflower Moving Service.

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Mayflower's organization of selected warehouse agents provides on-the-spot representation at the most points in the United States and Canada. Your local Mayflower agent is listed in the classified section of your telephone directory.



AERO Mayflower
America's Finest

NATION-WIDE FURNITURE MOVERS

For More Information Circle No. 218 on Inquiry Card—Page 17

8th District Conference

The Mayflower Hotel in Washington will be the scene of the NAPA 8th District Conference October 14-16. Clifton E. Mack and Pete Clarke, both of the Purchasing Agents Association of Washington, D. C., promise that an excellent program will be arranged. In addition to forums and talks that will help the PA do a better job, there will be an industrial exhibit of more than 40 booths.

Denver Ass'n Ladies Night

The Purchasing Agents Association of Denver wound up its 1953-4 season with Ladies Night. Members and their wives enjoyed a grand party at the Green Gables Country Club. A few weeks later, the old and new boards met to plan activities for the 1954-5 season starting in September.

Govt. Buyers Reelect McGuire as Chairman

James Clark McGuire, director of purchases and administrative services, Port of New York Authority, was reelected chairman of the Governmental, Educational and Institutional Buyers Group of N. A. P. A. This will be a third term for Mr. McGuire. Reelected for a second term were David L. Wilt, University of California, vice-chairman, and Joseph J. Fogarty, State of Rhode Island, secretary.

Sports Hero Speaks to Youngstown Ass'n

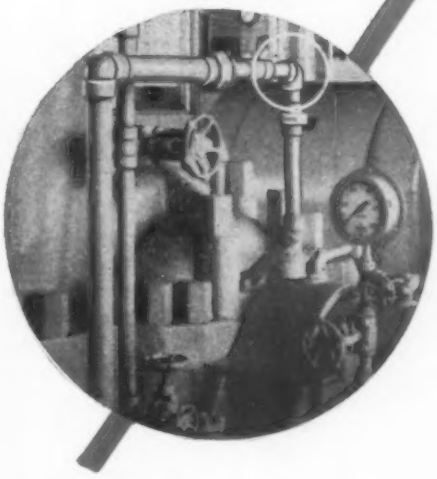
The June meeting of the Youngstown District Purchasing Agents Association was "Sports Night." The speaker was Harry A. Stuhldreher, assistant to the vice president, U. S. Steel Corp. He is perhaps better known as one of the "four horsemen" of the famed 1924 Notre Dame football team. Stuhldreher is the author of "Knute Rockne—Man Builder" and numerous articles.

Youngstown members are considering a proposal to establish a special class of "honorary retired members." When a regular member retired from his purchasing job, he could enjoy all of the association's activities without the burden of paying dues. The only privileges he would not have would be voting, holding office, serving on a committee, or membership in N. A. P. A.



CLOSE-UP VIEW of a HIGH SAFETY FACTOR

Against Costly Piping Failures



In power plants, chemical plants, refineries and other systems operating at high pressures and temperatures, W-S Forged Steel Fittings help protect the large investment in operating equipment. They provide a high safety factor against costly piping failures and plant down-time. They're drop-forged for *high strength* and *toughness*—the right combination of properties to withstand pressure, heat, shock, vibration and erosion. They're designed for extra strength, too—with extra heavy sections where you need them. And they're precision machined for perfect alignment.

Make Watson-Stillman Forged Steel Fittings your standard for safe, reliable operation of plant equipment. To suit any service and fabrication requirements, W-S Fittings are available in both Screw-End and Socket-Welding types in carbon, stainless and alloy steels. Write today for informative bulletins.

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Skin Toughening
STOPS
ATHLETE'S FOOT!



That's why OVER
70%
of the largest manufacturers
and many school systems
USE ŌNOX
in shower rooms!

✓ NO TROUBLE TO USE
No splash, no mess, easy to maintain. Nothing to get out of order.

MAKE 60 DAY TEST
We will ship trial order for any amount of ONOX and footmats. You pay nothing unless fully satisfied after 60 day test.

✓ TOUGHENS SOFT SKIN
Main cause of Athlete's Foot is *Shoe-Softened Skin* (U.S.P.H.S. Bul. R-674). ONOX mineral salts toughen soft skin and make it resistant to fungus growth.

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Warehouses: BROOKLYN, CLEVELAND, NEW ORLEANS, HAWTHORNE, CALIF.

For More Information Circle No. 220 on Inquiry Card—Page 17

Rabe Named Head of Cincinnati Ass'n

Edwin H. Rabe, purchasing agent for the Trumbull Department, General Electric Co., is new president of the Cincinnati Association of Purchasing Agents. He was elected at the annual meeting to succeed John M. Teipel, Stewart Iron Works Co.

Other new officers are Lawrence Wernke, Andrew Jergens Co., and William J. Lorenz, DuBois Co., Inc., vice-presidents; Andrew Hopple, NuTone, Inc., secretary, and Vincent R. Luebbe, Kiechler Manufacturing Co., treasurer.

Trustees are A. J. Schaub Jr., KD Lamp Division, Noma Electric Corp.; Albert L. Burke, John Van Range Co., and Bernard J. Burke, Vulcan Copper & Supply Co.

Earl F. Jung, Waltz-Dettmer Supply Co., was re-elected national director.

Public Utility Buyers Elect 1954-5 Officers

Fred D. Bradley, purchasing agent and assistant treasurer of Southern Union Gas Co., was elected chairman of the Public Utility Buyers' Group, N.A.P.A. Other officers elected were: Robert F. Isenhart, Dayton Power & Light Co., first vice-chairman; L. G. Wiseley, Michigan Consolidated Gas Co., vice-chairman; Harold T. Belcher, Consumers Power Co., vice-chairman; and R. H. Sperreng, Union Electric Company of Missouri, secretary-treasurer.

Members of the Executive Committee elected were: C. P. Altland, Southern California Edison Co.; Charles Auringer, Commonwealth Edison Co.; F. E. Baxter, Pacific Gas & Electric Co.; J. R. Carmichael, Georgia Power Co.; George H. Cole, Alabama Power Co.; Mark B. Covell, Union Electric Company of Missouri; John I. Evans, Ohio Edison Co.; James K. Hall, Columbus & Southern Ohio Electric Co.; G. L. Haszard, British Columbia Electric Co., Ltd.; J. Donald Hogg, The Cleveland Electric Illuminating Co.; J. B. Homsher, Gilbert Associates, Inc.; W. H. Jones, Philadelphia Electric Co.; Stephen J. Kennedy, Springfield Gas Light Co.; J. R. Millikan, Dallas Power & Light Co.; James J. Morse, New Orleans Public Service, Inc.; Ben R. Newbery, Lone Star Gas Co.; Chester F. Ogden, Detroit Edison Co.; Robert E. Shillady, New England Power Service Co.; R. V. Spangler, Duke Power Co.; Newman C. Stirewalt, Central Illinois Public Service Co.; Russell C. Wenz, Duquesne Light Co.; Daniel E. Winslow, West Penn Power Co.; and Arthur Ziegler, Consolidated Gas, Electric Light & Power Co. of Baltimore.

The Public Utility Buyers' Group, consisting of representatives of over 30 utilities companies, is the largest single group within the National Association of Purchasing Agents. Its 24th annual Mid-Winter Conference will be held at The Shamrock hotel, Houston, Texas, February 13, 14, and 15, 1955.

Elections at Columbus

Election of John Stalder of the Janitrol Division of Surface Combustion Corp. as its president for the coming year was announced by the Columbus Association of Purchasing Agents.

Stalder succeeds Robert L. Hunter of Norman Products Co., who becomes national director.

Other new officers are Lyle E. Treadway of Federal Glass Co., first vice-president; Ray S. Brown of General Electric Supply Co., second vice-president; Richard H. Colburn of Commercial Motor Freight Co., treasurer; Benjamin G. Goodall of Ross Willoughby Co., secretary, and James A. Seimer of The Belt Corp., local director. C. E. Peitsmeyer of Columbus Transit Co. is a holdover director.

Naval Officer Speaks to Washington Ass'n

Lt. H. W. Latham of the submarine USS Puffer was featured speaker at a recent meeting of the Purchasing Agents Association of Washington. He delivered an interesting account of World War II submarine operations and commented on new submarine design. "Silent Service," a navy documentary film was then shown. PA's saw in color actual sinkings of Japanese ships by our submarines during the war. Third on the triple feature program was the showing of "Operation Crossroads." The story of the Bikini A-bomb tests, it vividly portrayed the terrible power of nuclear fission.

QUICK—CONVENIENT
USE THE INQUIRY CARD ON PAGE 17 FOR ADDITIONAL INFORMATION ON ANY PRODUCT SHOWN IN THIS ISSUE



DON'T STEW!

Ask Your LYON Dealer

• It's so much more comfortable to get steel equipment the cool, calm, consistent way . . . from your Lyon Dealer.

He offers the world's most diversified line of quality steel equipment, as his 76-page Lyon catalog will prove. (A few of Lyon's 1500 standard items are shown below.) Equally important, he can show you how to get the most out of steel equipment in terms of saved time, space and money.

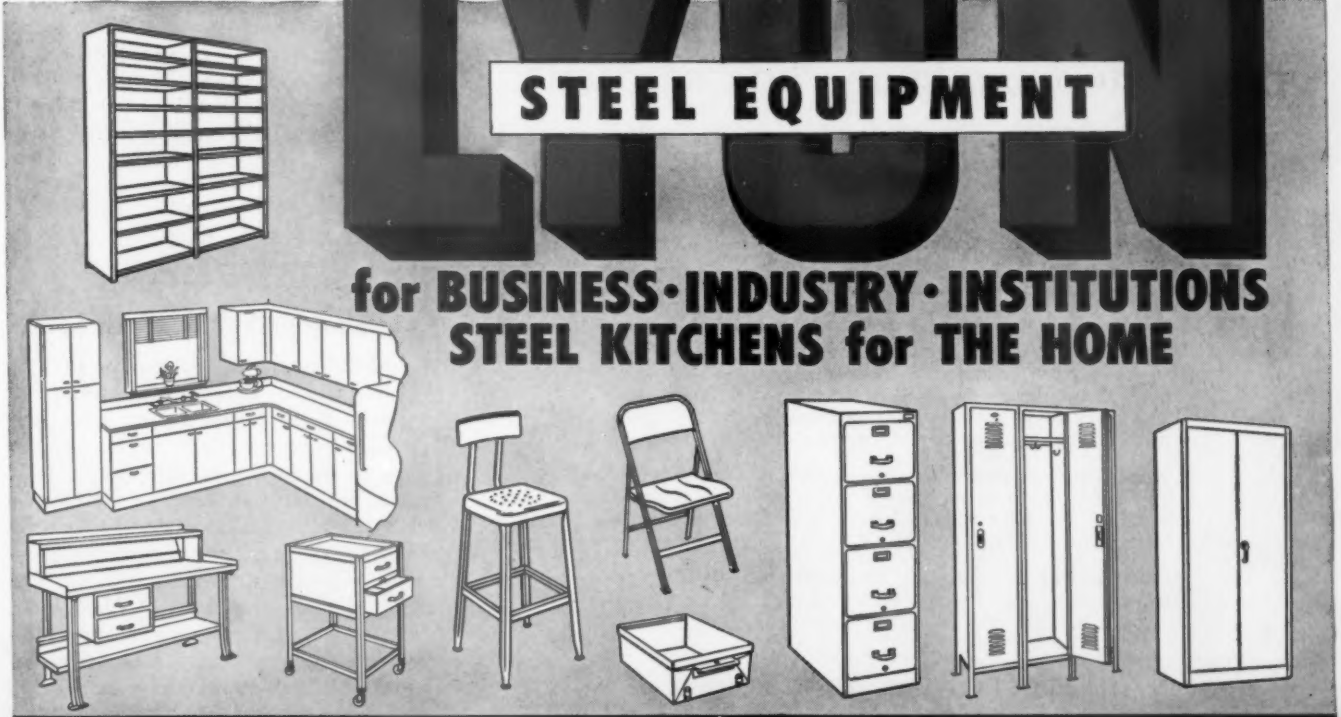
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General Offices: 833 Monroe Ave., Aurora, Ill.
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For More Information Circle No. 221 on Inquiry Card—Page 17



$200 chair . . . sheer nylon pair

both safe from snags and scratches!

(We doubt if we'll sell any LORODENT Packaging Material to young ladies, but it's a good way to demonstrate how completely our product protects even the most vulnerable surfaces!)

Lined Flexible LORODENT is an ideal material for packaging a wide range of products, from baby bottles to water heaters . . . makes a fine self-package, too! It combines unusual strength with cushioning and flexibility. And, it provides this really complete protection at an extremely competitive price.

Next time you order packing material, why not give us a chance to **prove** how competitive these prices are? Write, wire, or phone for costs and specifications.

LORODENT Packaging Material is available in rolls, sheets and tubes . . . in as many plies as desired . . . with any desired outerwrap.

FURNITURE PADS • LINED FLEXIBLE LORODENT

IMPROVED INTERLEAF LORODENT

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INDUSTRIES, INC. • READING, CINCINNATI 15, OHIO

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C. W. Bobb Heads Office Buyers Group

Newly elected chairman of the Banking, Insurance, and General Office Buyers Group of N. A. P. A. is C. W. Bobb, Fidelity-Philadelphia Trust Co. Other officers are: E. C. Rutherford, Western States Life Insurance Co., Sacramento, Calif., vice chairman; and Nicholas Van Wattingen, Colonial Life Insurance Co. of America, E. Orange, N.J., secretary.

The group had two sessions at the Chicago convention which members reported both interesting and rewarding. The first was a discussion of topics pertinent to members day-to-day jobs. Views were exchanged on standardization of typewriter purchases, rental vs. purchase of microfilm equipment, handling of office equipment inventories, advantages of charging equipment against using departments to promote cost consciousness, etc.

"Office Machines—Today and Tomorrow" was the subject of the second session. M. E. Mengel, director of production planning, Burroughs Corp. delivered an excellent talk. He discussed new machines now available and also previewed some which are being planned. Emphasizing that equipment can be built to perform almost any office function, he pointed out that the cost of the machine must be carefully weighed against the saving resulting from elimination of a manual operation. Members then saw a movie showing two of the latest electronic machines in operation at a New York bank.

* * *

Lima Buyers Hear W. R. Lantz

Members of the Lima Purchasing Agents Association were told that the "fine print" on the back of their own purchase orders can sometimes get them into a lot of trouble. William R. Lantz, director of purchases, Sun Rubber Co., explained that only a little knowledge of purchase contracts can be a dangerous thing. The 1953-4 vice president of N. A. P. A. continued and related several incidents where better knowledge of contract law could have saved his company money. Mr. Lantz was the speaker at the June meeting of the Lima association. The group, formed last November, has had a very good start and been fortunate in securing speakers of the calibre of Mr. Lantz.

ANACONDA METALS AT WORK

The American Brass Company develops a new kind of brass that cuts polishing time 50% for one manufacturer and improves product appearance for another... makes bronzes that extend the life of many metal parts

Spotlight on high luster at low cost

The high luster on these brass flashlight end caps didn't come naturally. Niagara Searchlight Corp., Buffalo, N. Y., had to buff it on. This was a high-cost operation. Now Niagara uses Formbrite* . . . a new kind of drawing brass that provides a surface far superior to ordinary brasses. Result? Niagara reports a 50% cut in polishing time. Plating and general quality are improved, too. And they find Formbrite easy to form, draw or emboss.





Old age insurance...

It's easy to take out. And you pay no premium. All you do is specify ANACONDA Phosphor Bronze for the many components like those shown. Ten alloys are available in seven forms. All are strong and tough. They bear up under constant wear and flexings, periodic stresses, fatigue and corrosion. They resist abrasion . . . conduct heat and electricity well . . . keep their high elasticity. We'll be glad to help you select the Phosphor Bronze Alloy that's just right for your job.



What's in a nameplate?

According to the Arlen Trophy Co., Brooklyn, N. Y., one of the largest trophy and premium manufacturers in the country, the *appearance* of a nameplate often means the difference between landing or losing a sale. But price is important, too. That's why Arlen now makes their nameplates out of Formbrite. It costs no more than ordinary brasses. Yet, because of its superfine grain structure, it polishes to a bright finish in half the time. Formbrite results in harder, stronger, springier, more scratch-resistant products, too.

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Want more information?

Our Technical Department can give you a wealth of information on the properties and applications of Formbrite and Phosphor Bronze. Write to: *The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.*

*Reg. U. S. Pat. Off.

ANACONDA®

the name to remember in COPPER • BRASS • BRONZE

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LOOK TO DETREX FOR Service WITH A Saving



Value Sign

IN SOLVENT DEGREASING

There are three basic reasons why you get more value in Detrex equipment.

First, no other company can match Detrex experience in solvent degreasing . . . in fact a Detrex development (the art of stabilizing chlorinated solvents) originally made possible modern solvent degreasing. Today, Detrex produces more equipment for use with chlorinated solvents than any other company.

Second, Detrex is the only manufacturer of degreasing equipment who is also a basic producer of solvent . . . industry's *largest* direct supplier of trichlorethylene. Thus, Detrex engineers, chemists, field technicians alike fully understand both the behavior of solvent as well as the operation of the equipment in which it is used.

Third, Detrex service does not stop with installation of equipment but continues, free of charge, for as long as the operation exists. A large, competent staff of Detrex technicians is dedicated to this important work.

All in all, you can't match the benefits that accrue to Detrex customers. And that is the reason why industry prefers equipment that bears the name Detrex . . . it is truly the value sign in solvent degreasing.

We'd like to have your field technician show us ways to cut costs, boost quality in our present degreasing operations. (There is no charge for this service, regardless of your present make of equipment.)

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COMPANY_____

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CITY_____ ZONE_____ STATE_____

DETREX CORPORATION

DEPT. E-312, BOX 501, DETROIT 32, MICH.

Oaklawn, Ill., Youth Wins Chicago Ass'n Scholarship

A 17-year-old Oaklawn (Ill.) youth has been awarded the first scholarship granted under Illinois Institute of Technology's unique management curriculum for the professional education of purchasing executives, in conjunction with the Purchasing Agents Association of Chicago.

He is Robert E. Taylor, who graduated from Reavis High school on June 11.

Mr. Taylor will enter Illinois Tech in September to begin study in the four-year program which leads to the bachelor of science degree.

Announcement of the award was made by Dr. Pearce Davis, chairman of IIT's department of business and economics, and Seymour Ellison, chairman of the educational advisory committee of the Purchasing Agents Association of Chicago.

Two full-tuition scholarships — each worth a maximum of $2,320 — have been created at Illinois Tech by the Chicago association.

Mr. Taylor, the son of Mr. and Mrs. Robert S. Taylor, ranked second in his class of 86 at Reavis and is a member of the National Honor Society.

Canton Ass'n Meets

Featured speaker at a recent meeting the Canton and Eastern Ohio Association of Purchasing Agents was R. E. Boyle of the General Electric Co. His topic was "Another Look At Automation." PA's learned about the future in electronic controls and some of the developments that can be expected. Mr. Boyle is Cleveland manager of G. E.'s Apparatus Sales Division.

E. Noble Heads Buffalo Ass'n

Members of the Purchasing Agents Association of Buffalo recently elected 1954-5 officers. President is Everett W. Noble of Moore Business Forms Inc. Other officers elected are: John R. Murphy, General Mills Inc., first vice-president; Robert G. Wahler, Hohl Machine & Conveyor Co., second vice-president; Paul Braun, Meyer Equipment Co., secretary; Charles D. Jones, Wood and Brooks Co., treasurer; and Edward G. Dobe, County of Erie, national director. New directors include A.

(*Please turn to page* 200)

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Cuts costs 60%

Woman with stapler beats woman twisting wire 3 to 1

This is a bag-sealing race between two women who pack carrots in a produce plant.

The woman on the right is a whiz at twisting wire around the necks of bags. All by herself she can keep up to the output of 3 fillers and weighers. But twist as she will, she can seal only a third as fast as the woman with the Bostitch stapler.

The plant owner conservatively estimates that he has cut over-all fastening costs 60% by switching to Bostitch stapling. Then, too, it's less tiring, it's neater, and with highly perishable produce it shortens exposure time between field and refrigerator.

Bostitch stapling speeds fastening and cuts costs in *many* fields. It can replace welding of sheet metal. It can upholster chairs, seal cartons, insulate walls, shingle roofs, fasten gadgets to display cards. Every day brings word of new uses from enterprising business and production men.

Perhaps *your* fastening jobs could be done better and faster with one or more of 800 kinds of Bostitch staplers. Call one of our 325 Economy Men who work out of 123 U. S. and Canadian cities. As a member of the largest and most carefully trained group of its kind, he'll tell you *honestly* whether it will pay you to switch to stapling.

Look up "Bostitch" in your phone directory or write us.

Fasten it better and faster with

BOSTITCH®
STAPLERS AND STAPLES

FREE *time and money saving bulletins tell how stapling can cut your costs.*

BOSTITCH, 728 Mechanic St., Westerly, R. I.

I want to fasten:

☐ plastic bags ☐ light metals ☐ cartons ☐ fabric
☐ wood ☐ leather ☐ rubber ☐ roofing

*Name*_____

*Company*_____

*Address*_____

*City*_____ *Zone*_____ *State*_____

For More Information Circle No. 225 on Inquiry Card—Page 17

Only
MOBILIFT
gives you Mobil-Matic Drive*
with HYDRA-LIZER*
in the NEW
3,000 lbs. at 24"
4,000 lbs. at 24"
FORK LIFT TRUCKS



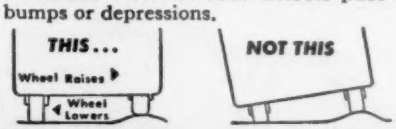
Model Shown,
New M-324
with 83" Mast

More Operational and Service Features
- Easy to get on and off from either side.
- Spring mounted rear wheels for riding comfort.
- Combination ball bearing worm and nut type steering.
- One-piece hinged hood for easy access to engine compartment.

AND MANY OTHERS

* MOBIL-MATIC DRIVE
Fluid coupling, oil-immersed clutch, constant mesh transmission — a combination that transmits power smoothly and efficiently with minimum wear and service. There is NO CLUTCH PEDAL — just ONE push-pull forward and reverse lever!

* HYDRA-LIZER
Another Mobilift exclusive . . . equalizers mounted on each rear wheel and connected hydraulically to cross compensate the truck when the *front* or *rear* wheels pass over bumps or depressions.



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1113 Spring Street, N.W., ATLANTA

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(*Continued from page* 198)

M. Judd, Paul Braun, and Charles Jones.

Summer activities of the group consist of a golf party held in Ridgeway, Canada in July and the "Annual Picnic for Purchasing Agents" which will be held August 11 at the Automobile Club of Buffalo in Clarence, N. Y.

1 1 1

Syracuse Ass'n Visits Plant

The Chicago Pneumatic Tool Co. of Utica was host to the Purchasing Agents Association of Syracuse and Central New York recently. Members found their tour of this leading manufacturer's plant interesting and educational. The group then went to the Yahnundasis Gold Club for an afternoon of relaxation and dinner.

Program Aids

"Big Enterprise in the Competitive System" is a 45 minute color sound film available from Encyclopedia Britannica Films, Wilmette, Illinois. It traces the growth of big business to determine "whether it has grown *with* the rest of the economy *or* at the expense of it." Produced for the Brookings Institution and the Alfred P. Sloan Foundation, it portrays the outstanding economic growth since 1909. Investigated are such questions as: "Has big business grown at the expense of small business?"

A 20 minute sound color film, "Steel Tubes for Industry" has been recently released by the Pacific Tube Co., 5710 Smithway St., Los Angeles 22, Calif. An interesting education in tube making, it features animated drawings illustrating the methods of manufacture.

"Making the Most of Spray Painting" illustrates the four basic principles of spray painting. They are: control factors, proper equipment, techniques, and maintenance of equipment. This 45 minute, black and white, sound film is available from The DeVilbiss Co., 300 Phillips Ave., Toledo, O.

FOR FURTHER INFORMATION ON PRODUCTS IN THIS ISSUE PLEASE USE INQUIRY CARD ON PAGE 17

Black & Decker
Cases for Comment

CONSTRUCTION



(Case History 4881)
Workers on heavy construction project report B&D Portable Electric Grinders... stand up very well, very handy to use, not awkward nor heavy, give no vibration.

MAINTENANCE



(Case History 2117)
B&D Bench Grinders often give more than 10 years constant use...not losing a minute for repairs.

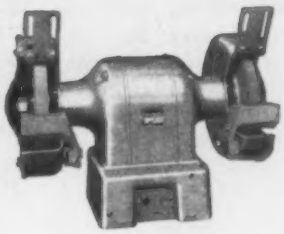
PRODUCTION



(Case History 4092)
This B&D Die Grinder cuts grinding time ⅓ ...does twice the work.

The McDonald Company of Boston, Mass. manufactures galvanized iron and stainless steel equipment. B&D Tools used for approx. 8 years. In addition to Die Grinder they use B&D Shears, Holguns* and Portable Electric Grinders. The Black & Decker Die Grinders have cut the job time by at least ⅓. Company reports amount of work doubled.

Joe, plant management says that B+D Tools "can take it"
Top management says, "could use more of them"



BENCH GRINDERS
Heavy-Duty models available in 3 sizes, 6", 8", 10". For the finest tool dressing, grinding, wire brushing, burnishing, buffing.



PORTABLE ELECTRIC GRINDERS
In 3 models, 3", 5", 6". All with husky housings and precision parts. Ideal for any job where grinder must be taken to the work.



DIE GRINDERS
2 models. The No. 8 is powered by a new B&D-built motor. Small, only 2½ lbs... compact, diameter only 2⅛". Also available, 3" Die Grinder.

Here's Proof that Black & Decker Power Saves *Time and Trouble*

In countless cases where industry needs power, industry's choice is Black & Decker.

In grinders, drills, saws, hammers, screw drivers, industry finds Black & Decker packs the power to get greater production... per machine... per man-hour.

Why? Because Black & Decker Power is *custom-built* into every B&D Tool... power to perform the job the tool is specially designed to do. B&D Tools are driven by B&D-built motors. Built with precision parts and husky housings (in the most advanced designs) every B&D Portable Electric Tool can be relied upon to give long service with less trouble. Every one is a profit-making production tool. And the facts prove it.

Find out for yourself. Next time the job calls for power, call on Black & Decker to supply it. Call your B&D Distributor for a demonstration. And write for free detailed catalog. Address: THE BLACK & DECKER MFG. CO., 607 Pennsylvania Ave., Towson 4, Md.



See "TOOLS-ELECTRIC"

LEADING DISTRIBUTORS EVERYWHERE SELL

Black & Decker
PORTABLE ELECTRIC TOOLS

* Trade Mark Reg. U. S. Pat. Off.

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42 STOCK SIZES

HALLOWELL®

SOLID STEEL COLLARS



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Your HALLOWELL distributor now stocks these *size-marked* precision machined solid steel collars in sizes to fit shafts from 3/16" to 3" inclusive. And positive positioning of every HALLOWELL Collar is assured by the famous self-locking UNBRAKO Socket Set Screw—the screw that won't work loose. Write for literature and the name of your nearest HALLOWELL distributor. STANDARD PRESSED STEEL CO., Jenkintown 31, Pa.

HALLOWELL POWER TRANSMISSION DIVISION

SPS

JENKINTOWN PENNSYLVANIA

For More Information Circle No. 228 on Inquiry Card—Page 17



For More Information Circle No. 229 on Inquiry Card—Page 17

Electrical Modernization Theme of Westinghouse Show

Westinghouse Electric Corporation has produced a two hour presentation, "Chain Reaction." Customers in nearly 100 cities will see it. A unique feature is that a live performance is combined simultaneously with movies, slide projectors, and directional sound.

The show begins as Ed Carson, president of a typical manufacturing plant, learns that a new machine cannot be operated without changing his electrical distribution system. It is so badly overloaded that line losses and motor failures are already costly. He discovers that he can reduce downtime, improve safety and working conditions, and cut power and maintenance costs with a modern system. The flexibility and other advantages of bus duct, power centers, circuit breakers, capacitors, and scientific lighting are emphasized.

In presenting his program to the board, Carson convinces them that they must "compete or collapse." His bold action in a period of economic uncertainty influences others in the community. Rather than lost tenants, a building owner decides to modernize his wiring to handle air conditioning loads. Thus, the "Chain Reaction" starts.

* * *

Growth of Optics Industry Told in Illustrated Book

An unusual story describing the growth and expansion of an American industry is given in "Optics plus", a 64-page book published by The Perkin-Elmer Corporation, Norwalk, Conn.

Fifteen years ago there was no firm in America that could do optical work comparable with that of Zeiss, but The Perkin-Elmer Corporation, by merging the latest developments in optics, electronics and mechanics, has surpassed many of the most famous Zeiss achievements.

"Optics plus" tells the story of this merger, its accomplishments, and how this approach may be used to solve current industrial problems in control and research. It is illustrated with a series of photographs of the plant.

While there is no charge for "Optics plus," only requests submitted on a company letterhead will be acknowledged. Write to Paul A. Wilks at The Perkin-Elmer Corporation, Norwalk, Conn.



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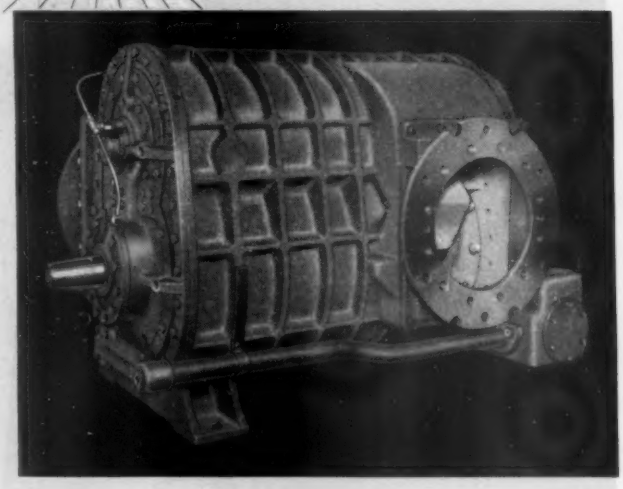
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For More Information Circle No. 230 on Inquiry Card—Page 17

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The *Standardaire* Blower moves more air . . . with less wear, maintenance and power cost than blowers of equal weight and size.

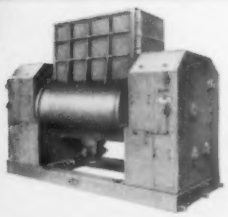
By employing a proved principle of compressing air on a modified adiabatic cycle, the *Standardaire* Blower provides a wide range of pressures with a minimum of internal losses. The cycloidal form, screw type rotors draw the air in and discharge it smoothly without shock from the pockets which form between the precision machined rotors.

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Read Standard also manufactures a complete line of chemical mixers for laboratory and industrial use. For information write, Read Standard Corp., York, Pennsylvania



For More Information Circle No. 231 on Inquiry Card—Page 17

G. E. Offers TV Equipment for Industry and Business

The General Electric Company has announced color TV systems for closed circuit use in industry, business, and education.

Pictures are not broadcast with this equipment as they are from a commercial TV station, but are "piped" from the TV camera through coaxial lines or over microwave relays to home-type receivers or large screen TV projectors.

William J. Morlock, general manager of the company's Commercial Equipment Department here, said that field tests of various types of color television systems for industrial use reveal the sequential system as far superior for true reproduction of colors and image detail. In addition, he said, the sequential system offers the user a lower initial and operating cost because it is less complicated.

Morlock went on to say that for industrial, educational, and business use, closed circuit color TV provides image detail impossible with black and white systems. Color also adds the real life quality and sense of reality highly important to industrial, business, and educational people who, not interested in entertainment, want the facts as they actually exist. Black and white, "color-blind" TV, he pointed out, inherently cannot show the important changes in color vital to most operational users of TV.

New Brochure on Shell Molding

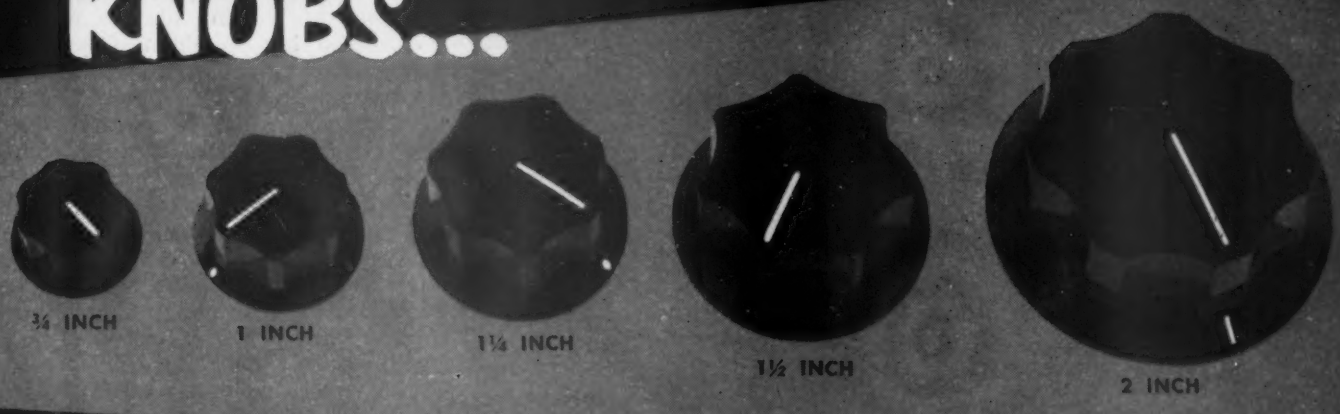
An informative, illustrated manual on shell molding — demonstrating how this new casting process has reduced machining and finishing costs as well as foundry casting time — has been announced as available by the General Electric Company's Chemical Materials Department, Pittsfield, Mass.

The 28-page brochure (CDC-272) describes the latest developments in shell molding, and the benefits offered by this process to foundrymen and buyers of foundry products.

Shell molding is a new foundry process designed to make thin sand molds for the production of smooth, accurate castings. Case histories, testing methods and production techniques are treated in the publication.

CDC-272 may be obtained by writing the General Electric Company, Chemical Materials Department, Pittsfield, Mass.

KNOBS...

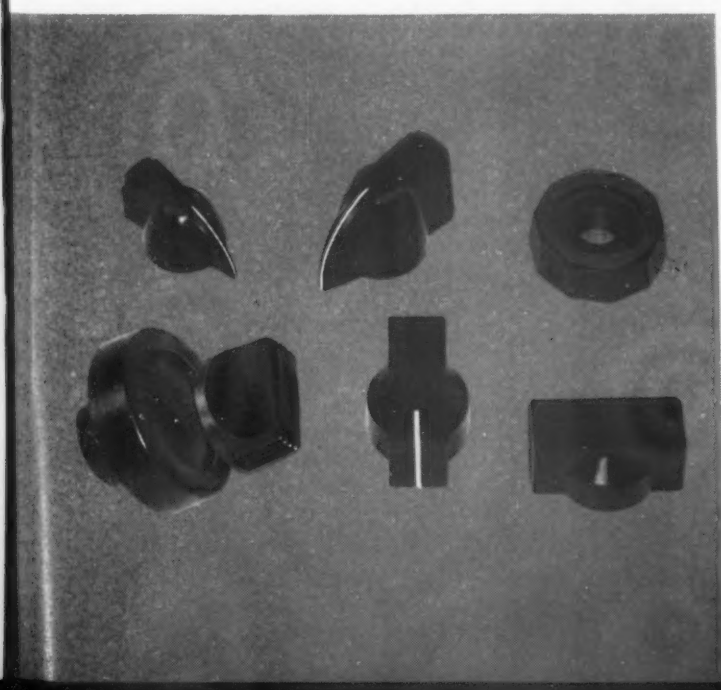


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Our facilities are best-suited to the processing of light to medium-heavy fabrication of materials up to ⅜-inch thickness. Our operations include such specialized production methods as Multi-Stamping; an automatic method of processing small, intricately-formed parts in a single 4-slide machine. Precision stampings such as refrigerator intake and discharge valve reeds, made from high carbon, heat-treated and ground imported valve steels, are produced to critical tolerances in our precision parts department. Knuckle-action presses, accommodating up to 400-ton capacity, perform close tolerance coining—can frequently save you the additional expense of a grinding or machining operation. Our bed areas range from 10″ x 12″ to 48″ x 72″, pressures from 5 to 250-tons. We draw to 4″ deep.

Other De-Sta-Co products are Toggle Clamps for jigs and fixtures, Precision Washers, Arbor Spacers and Shims, Shim and Feeler Stock.

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Welding Aluminum Outlined in 'How-to-Do-It' Book by Alcoa

The latest developments in the science of welding aluminum are described by Aluminum Company of America, Pittsburgh, in the book, "Welding Alcoa Aluminum."

The 176-page book combines the knowledge of Alcoa's Aluminum Research Laboratories with the practical experience of its Process Development Laboratories.

Photographs and drawings are used to illustrate all the practical methods for welding aluminum. These include torch welding, arc welding — including inert-gas shielded arc welding — resistance welding, and pressure welding.

Special attention is given in the book to selection of welding method, performance of welds, welding of aluminum castings and control of welding quality.

"Welding Alcoa Aluminum" replaces "Welding and Brazing Aluminum Alloys" in the company's How-To-Do-It series of books. Another book dealing specifically with brazing will be published at a later date.

Copies of "Welding Alcoa Aluminum" are available from Aluminum Company of America, 733 Alcoa Building, Pittsburgh 19, Pa.

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SIPMHE to Sponsor Project on Pallett Standardization

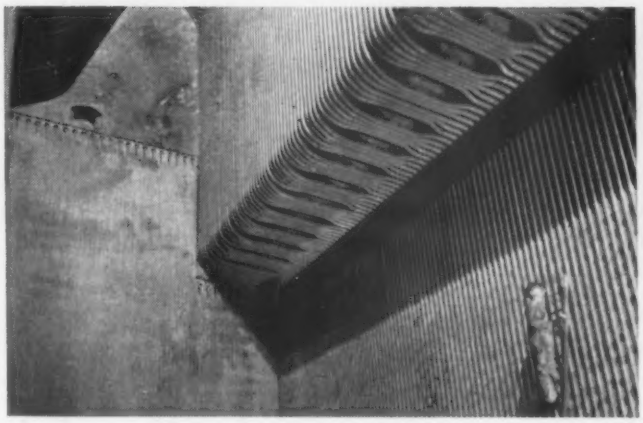
At the invitation of the American Standards Association, national standards development group, the Society of Industrial Packaging and Materials Handling Engineers has accepted sponsorship of a project on "Pallet Standardization," according to Earl B. Candell, General Electric Co., Lamp Div., SIPMHE president.

The American Society of Mechanical Engineers has accepted SIPMHE's invitation to administrative co-sponsorship, as this will be SIPMHE's first project in the general area of packaging and materials handling standardization, whereas the American Society of Mechanical Engineers, through its various committees, sponsors some 30 American Standards Association projects.

Scope of the project, as recommended by interested industry representatives at a recent meeting, is "Standardization of Nomenclature, Materials, Sizes, and components of Pallets including sampling, inspection and test procedures."

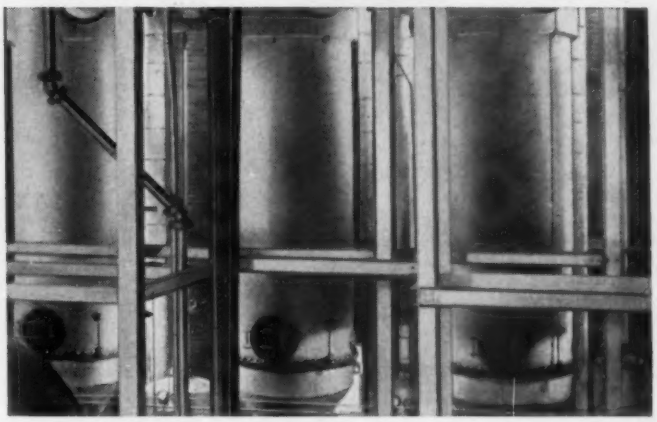
For More Information Circle No. 233
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There's no limit to what you can do with the right tubing!



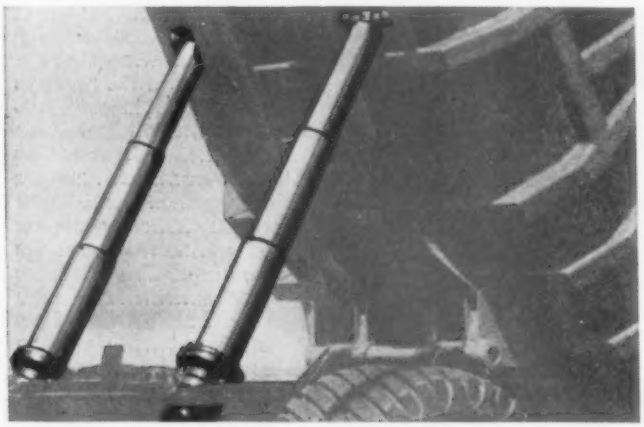
make power to light a city . . .

There are more than 12 miles of Globe seamless pressure tubing (carbon, alloy, and stainless) in this modern boiler which is a vital part of the electric power plant that serves a large metropolitan community.



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Black liquor, used in production of kraft papers, is highly corrosive and has to be carried under pressure in multiple effect evaporators. Gloweld (electric welded) Stainless Steel Tubing was found to do the job best—at lowest cost.



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Mounted on a dump truck, these twin hydraulic hoists are built to handle heavy loads. Design and production is simplified by making the telescoping arms of Globe mechanical tubing.

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HIGH PURITY IRON: Globeiron tubing is 99.5% pure ingot iron. For applications where ductility, toughness, easy weldability and easy forming are desired or for use where magnetic permeability and electrical properties are required.

SPECIAL ANALYSES: Globe Steel Tubes Co. regularly produces tubing to special customer specifications. Consult with Globe's representatives for analyses to suit your needs.

GLOBE WELDING FITTINGS: seamless, carbon and stainless, available in a complete line of sizes and weights through Globe distributors in key cities.

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Asbestos Insulation Cements—For all types of heat insulation jobs . . . from pointing up fittings to final surfacing insulation. Special types for specific requirements.

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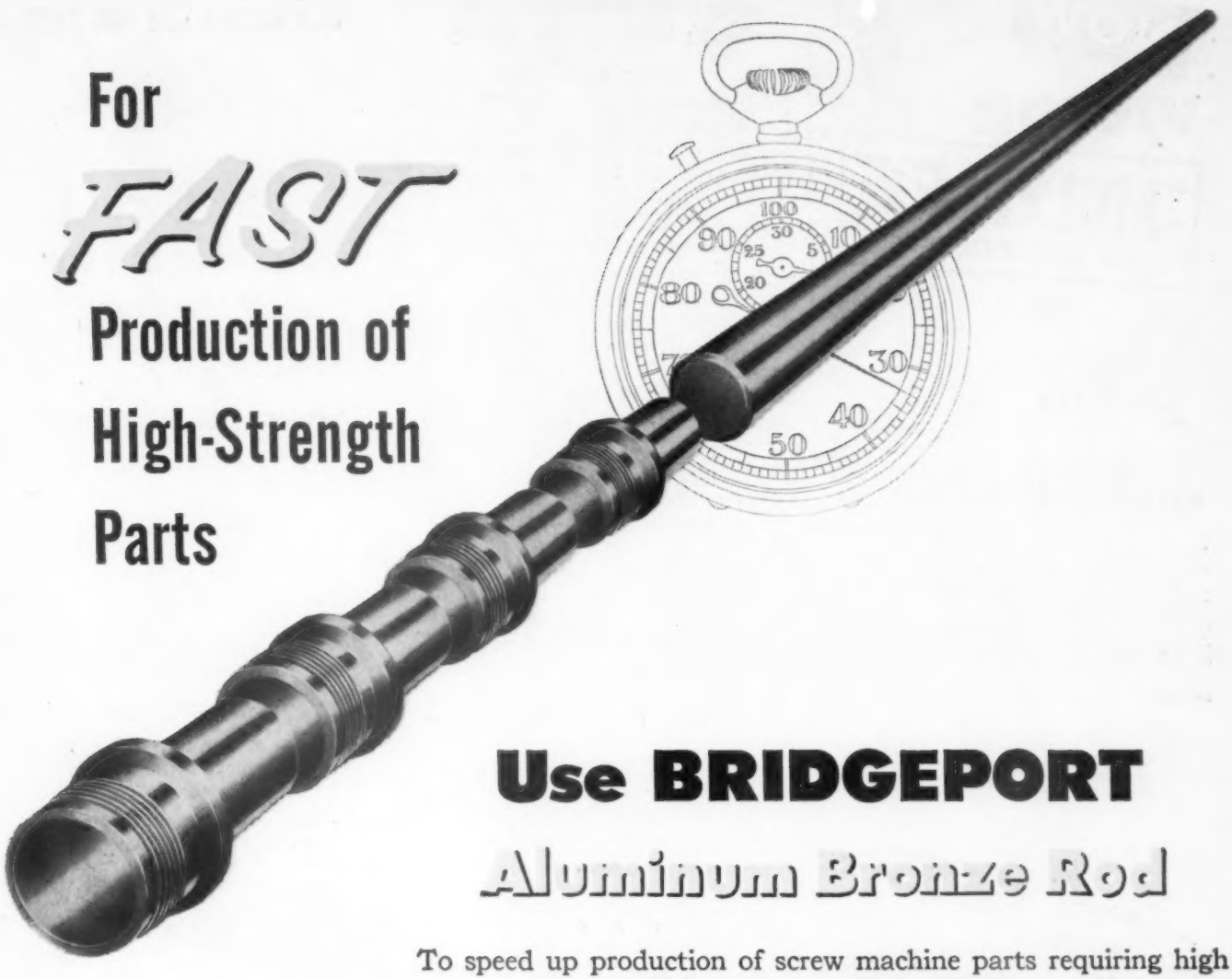
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For More Information Circle No. 235 on Inquiry Card—Page 17

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To speed up production of screw machine parts requiring high strength and outstanding durability, use Bridgeport Aluminum Bronze, Alloy 707. It gives superior service in wire and cable connectors, bolts, nuts, gears, pump parts and many other applications where dependability is a vital requirement.

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Bridgeport Aluminum Bronze is one of a wide variety of Bridgeport Alloys that meets almost every screw machine requirement. Your nearest Bridgeport Sales Office can give you complete information on any Bridgeport Alloy and also offer you the advantages of our Technical Service to help you solve methods and metals problems.



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For More Information Circle No. 237 on Inquiry Card—Page 17

Idea Cuts Company's Steel Costs; Wins $2,937 Check

Roland Meyer, an employe of the Westinghouse Electric Corporation's Transformer Division in Sharon, Pa., is $2,937 richer because he thought of a way to cut the company's steel costs.

The $2,937 check he won through the Westinghouse employe suggestion system is the biggest in the history of the suggestion system at the Sharon plant and ranks high among the all-time awards. Westinghouse, since 1910, has paid out more than $1,825,000 to employes for ideas on how to improve company operations.

Mr. Meyer, who is assistant staff supervisor in charge of quality control of incoming materials, made his award-winning suggestion while he was on an inspection assignment in the quality control department. He saw that it would be possible to delete certain physical requirements from the purchase specification for sheet steel used in the manufacture of transformer radiators.

Adoption of his suggestion has resulted in a reduction of 45 cents per hundredweight in the price of this type of steel purchased by the Transformer Division.

* * *

Resin-Rubber Plastic Pipe Does Difficult Job

Resin-rubber plastic pipe, carrying a concentrated brine solution, has passed trial tests and is now in constant operation in a water softening service plant in Winona, Minn. Its use points up the growing acceptance of plastic for difficult piping jobs.

The pipe, made from Kralastic, a synthetic resin-rubber plastic produced by Naugatuck Chemical division, United States Rubber Co., has replaced copper and galvanized iron pipe in the plant operated by Grant Burleigh, Culligan Soft Water Service of Winona, Minn. It was installed in half the time required for metal, was less than the cost of copper and about equal in cost to galvanized iron.

The copper or galvanized iron pipe previously used in the Winona service unit was corroded by the brine solution or affected by electrolytic action. The plastic pipe, made by Anesite, Inc., of Chicago, Ill., is not attacked by brine and won't support electrolytic action.

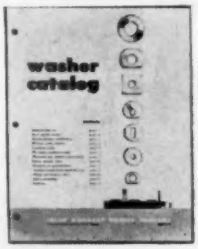
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write for our new catalog of standard and special washers for all types of industrial applications.

WASHER



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For More Information Circle No. 238 on Inquiry Card—Page 17



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Konik metal is a special analysis steel containing copper, nickel and chromium for greater strength and rust resistance. Galvanizing after weaving adds still more protection. Remember, only Continental is made of Konik Steel.

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For More Information Circle No. 239 on Inquiry Card—Page 17



WING NUTS

Think of CENTRAL



PRECISION PRODUCTS—The many variations of Central (patented) Wing Nuts meet the demand for manual adjustment methods of assembly. Made of steel or brass with ample wing spread and base areas, they are threaded to spin on and grip securely.

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For More Information Circle No. 240 on Inquiry Card—Page 17



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for each of your fabricating requirements...

sheet...strip...mill coils...or cut to length.

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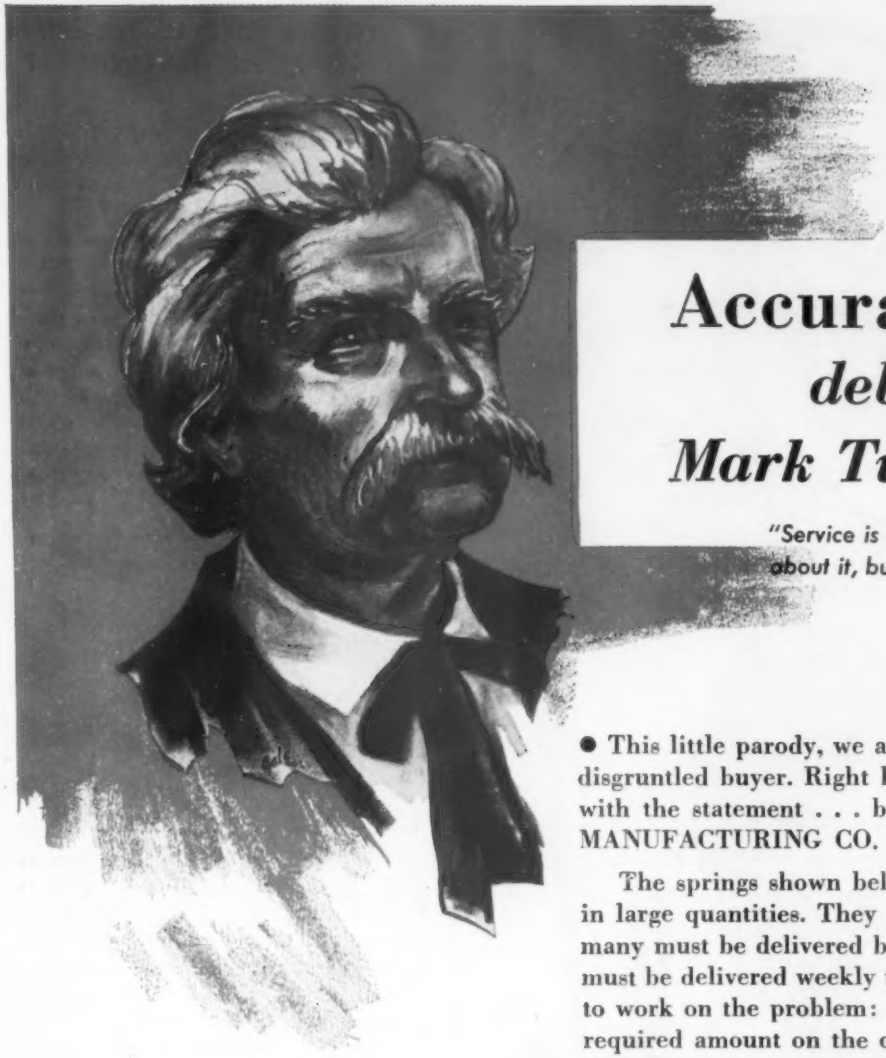
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For More Information Circle No. 241 on Inquiry Card—Page 17



Accurate Spring *debunks a Mark Twain Parody*

"Service is like the weather, everybody talks about it, but no one does anything about it."

with apologies to Samuel Clemens

● This little parody, we are sure, was originated by some disgruntled buyer. Right here we wish to take issue with the statement . . . because ACCURATE SPRING MANUFACTURING CO. does do something about service.

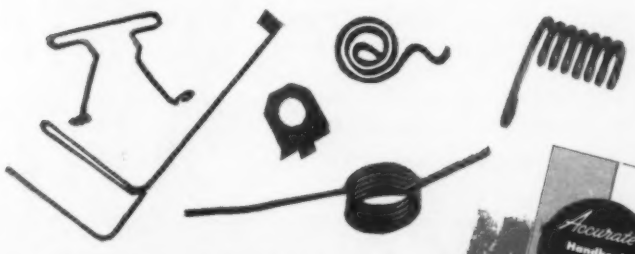
The springs shown below were ordered by a customer in large quantities. They must be held to close tolerances, so many must be delivered by a specified date and so many must be delivered weekly thereafter. Accurate engineers went to work on the problem: the day of delivery saw the required amount on the customers' receiving platform and there have been weekly deliveries since.

The incident above is one of many where Accurate Spring has proved their service is just more than "talk." One of the basic principles of our business is *service* . . . the other is a quality product.

There is only one way to prove to yourself this isn't just more "talk." That's a chance for us to show you what we mean by Accurate service and Accurate quality springs. Write today . . . and let us prove it!

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Ask for your copy of the Accurate Handbook of Technical Data on Springs. It's full of information on how to specify springs.

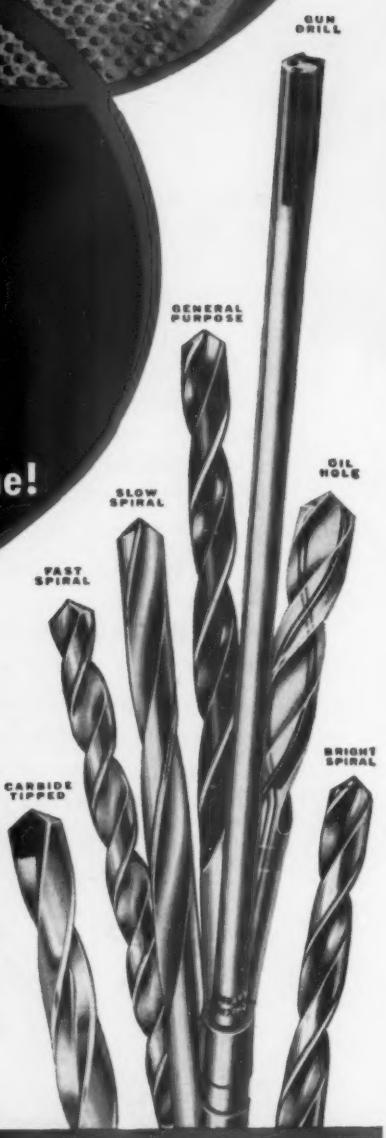
For More Information Circle No. 242 on Inquiry Card—Page 17

Double-Circle Testing

ASSURES LONGER LIFE MORE CUTTING MILEAGE!

lower tool costs for you...

less shut-down time!



● Careful testing at Chicago-Latrobe gives accurate appraisal of the number of holes a DOUBLE-CIRCLE Drill will cut before sharpening becomes necessary. Constant effort by Chicago-Latrobe engineers steadily increases performance. High standards of quality and careful inspection of every manufacturing operation is maintained to meet close tolerance specifications...to give you LONGER CUTTING MILEAGE... and less shut-down time.

A variety of types and sizes of DOUBLE-CIRCLE Drills meet every requirement... General Purpose... Heavy Duty... Fast Spiral... Slow Spiral ... Bright Spiral... Carbide Tipped and Specials. Write for booklet No. 179 for description.

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DRILLS • REAMERS • COUNTERSINKS • COUNTERBORES • CARBIDE TOOLS • SPECIAL TOOLS

For More Information Circle No. 243 on Inquiry Card—Page 17

Brochure Aids In Problem Of Buying Pattern Equipment

A unique and highly useful brochure is the Pattern Buyers Guide made available by the Master Pattern and Mold Company, Cleveland 13, Ohio.

It is designed as an aid to those who are not engaged in the foundry industry, but who are nonetheless faced with the problems of purchasing adequate pattern equipment as a phase of product design or production engineering. The cover of this guide contains a slide chart which shows pattern recommendations by casting quantity requirements.



The new reference book contains a complete glossary of terms and is illustrated. A brief description is given of the features found in the following equipment: cast iron patterns, brass patterns, permanent molds, aluminum patterns and matchplates, hardwood equipment, pine patterns of various grades and green-sand-core molds.

Also discussed are such auxiliary products of the pattern makers art as lost wax and frozen mercury process dies, shell molding patterns, compression molds for the forming of Fiberglas reinforced plastics, die makers' models, and operating machinery models.

1 1 1

Three Plans Available On Machine Tool Rental Setup

The Gisholt Machine Company of Madison, Wisconsin, announces a plan for the leasing of machine tools. Although this is the first public announcement to the metalworking trade, there are several plants now operating Gisholt machines under this plan.

Three plans are available, each based on a seven-year lease agreement. Each may be written either with or without the option to purchase. The right to terminate the agreement at the end of one, two or three years depends on the plan selected. The lease may also be

(*Please turn to page* 216)



background photo courtesy of Shell Oil Company

J-M CHEMPAC®—an asbestos-Teflon packing that withstands virtually ALL chemicals

THIS NEW Johns-Manville development combines the sealing action and heat-resistant characteristics of asbestos with the all-around chemical resistance of Teflon. Its base is strong, resilient asbestos fibers thoroughly impregnated with chemically inert Teflon.

The versatility of Chempac greatly reduces the number of packing styles needed for chemical equipment. Stocking presents no problem because its inert ingredients do not deteriorate.

Chempac can be recommended for packing pump rods or shafts, valve stems, agitator shafts, expansion joints, rotary filters and similar apparatus. It is outstanding in service against many acids, alkalies, caustic solutions, and solvents, at temperatures to 525° F.

Chempac Packing is available in coil, spiral and ring form for rod, plunger and valve stem service. Style Nos. 2011, 2012 and 2013 are made of white Canadian Chrysotile Asbestos. No. 2014 is made of blue African Crocidolite Asbestos. Johns-Manville also makes Chempac Gaskets, Nos. 117 and 138 of plies of asbestos cloth treated with Teflon.

Your Johns-Manville Packing Distributor can help you select the right Chempac Packing or Gasket for your application. For complete information write him or Johns-Manville, Box 60, New York 16, N. Y. In Canada, 199 Bay Street, Toronto 1, Ontario.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville PACKINGS & GASKETS

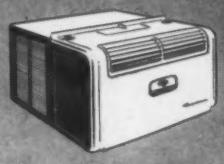
For More Information Circle No. 244 on Inquiry Card—Page 17



Pressure Type Water Coolers



Self-Contained Air Conditioners



Room Air Conditioners

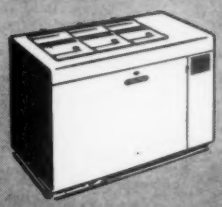
Buy Better... Buy FRIGIDAIRE



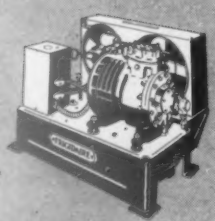
Compartment Bottle Type Water Coolers



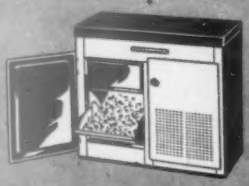
Reach-In Refrigerators



Low Temperature Cabinets



XD Meter-Miser Compressors



Ice Cube Makers

More and more men who buy for industry are making Frigidaire their first source for cooling equipment of every kind. They've found it pays real returns in higher performance, lower operating and maintenance costs, as well as in real dependability.

Call the Frigidaire distributor or Factory Branch that serves your area. Or write: Frigidaire Division, Dayton 1, Ohio.

FRIGIDAIRE

Water Coolers

Air Conditioning

Refrigeration

BUILT AND BACKED BY GENERAL MOTORS

For More Information Circle No. 245 on Inquiry Card—Page 17

(*Continued from page* 214)

written with the option to purchase at the end of any one of these same years.

This plan is designed to cover standard machines, plus the required electrical equipment. Certain accessories and all tooling must be purchased outright. Special purpose machines can be leased by special arrangements. All plans are restricted to firms with well established credit references and limited to firms operating within the continental limits of the United States.

New Silicone Finish Developed For Woolens And Worsteds

Woolens and worsteds can now be treated with a new silicone finish developed by Dow Corning Corporation, Midland, Mich., to add to the natural excellence of wool, properties previously associated only with the "miracle fibers." Identified as Dow Corning 105 Emulsion, the finish cures in 10 to 20 minutes at temperatures as low as 250°F.

Most finishes previously developed for woolens and worsteds detract from the full and luxurious feeling characteristic of wool. Dow Corning 105 Emulsion, however, makes fabric woven of wool feel even more desirable; adds more apparent bulk to many constructions. And this new silicone finish imparts a truly durable water repellency and a high order of resistance to staining by water borne soils, since garments made of fabric finished with Dow Corning 105 are not wet by showers. Creases are retained with less pressing. Wrinkle resistance is improved. Tensile strength remains unchanged or is slightly improved, while flex abrasion resistance is increased from 30 to 65%.

Of particular interest in connection with upholstery fabrics is the fact that Dow Corning 105 Emulsion is also the most oil-resistant silicone finish ever developed. Oily or greasy stains may easily be spot-cleaned from silicone treated fabrics woven of wool, synthetic or mixed fibers without leaving a telltale solvent ring.

Dow Corning 105 Emulsion is also fully compatible with most conventional resinous finishing solutions. Available in the form of a stable, 40% silicone emulsion, its material cost is comparable to that of other Dow Corning textile finishes.

NEW AEROQUIP SOCKETLESS FITTINGS

make hose line replacement amazingly easy . . . amazingly quick!



Imagine making Aeroquip hose assemblies by just *pushing* socketless fittings into the hose! Hand pressure does it, and the fittings stay on for keeps thanks to unique design features.

With no socket, Aeroquip socketless fittings are the last word in one-piece simplicity. They are specifically designed to work with Aeroquip 1525 triple-ply, cotton-reinforced hose.

A small inventory of bulk stock makes fuel, air, water, and oil lines using medium pressures. There is no waste or dead inventory. Sizes available are ¼, ⅜, ½, and ⅝". For more information call your Aeroquip distributor or write us direct.

Just Push Them On!
. . . They'll Stay On!



Aeroquip

REG. TRADE MARK

AEROQUIP CORPORATION, JACKSON, MICHIGAN

SALES OFFICES: Burbank, Calif. • Dayton, Ohio • Hagerstown, Md. • High Point, N. C. • Miami Springs, Fla. • Minneapolis, Minn. Portland, Ore. • Van Wert, Ohio • Wichita, Kan • **IN CANADA:** Prenco Progress and Engineering Corporation Ltd., Toronto

AEROQUIP PRODUCTS ARE FULLY PROTECTED BY PATENTS IN U.S.A. AND ABROAD

For More Information Circle No. 246 on Inquiry Card—Page 17



NOTHING TAKES THE PLACE OF VULCANIZED FIBRE

the Tough stuff that makes a rough job easy to handle . . .

Sanding and grinding work is most likely to smooth out successfully for the operator when he uses abrasive discs made of vulcanized fibre. National's Abrasive Fibre is favored among the makers of abrasive discs for its toughness, high tear strength, ability to withstand severe mechanical stress, and for the long service it provides. It has outstanding gluing properties, too. The overall result is performance that pays off at every speeding turn of the wheel.

It's the toughness of our fibre that counts in abrasive discs. But National Vulcanized Fibre is so versatile—so inherently endowed with good characteristics—that this material offers practically every industry one or more essential qualities. Light weight, high dielectric strength, resilience, durability, machinability—what does *your* business *need?* Electrical components, gears, pulleys, bobbin heads, welders' masks, football helmet crowns—what do you *make?* National Vulcanized Fibre is almost certain to fill your bill of specifications, no matter how exacting.

Give us a call. We'll be glad to show you why National Vulcanized Fibre is called the Material of a Million Uses.

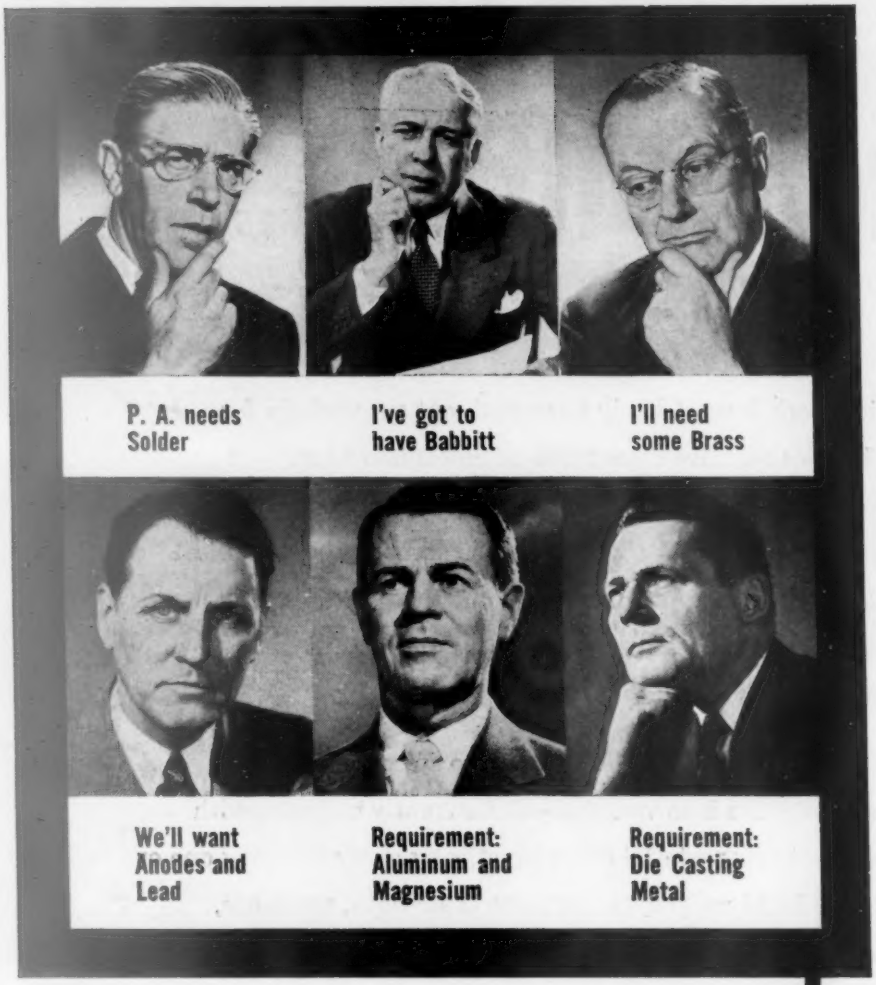
NATIONAL
VULCANIZED FIBRE CO.
WILMINGTON 99, DELAWARE

FOR YOUR STAFF—*just off press . . . an eight-page booklet entitled "Meet 'Sherlock' Fibre (or, Clues You Should Know To Make Profits Grow)." Tells—at a minimum of your reading time—why National Vulcanized Fibre is "the material of a million uses." Ask the National representative nearest you for your copy. He's listed in the classified directory. Or write to National Vulcanized Fibre Co., Dept. E-8, Wilmington 99, Delaware.*



Also manufacturers of Phenolite Laminated Plastic, Vul-Cot Waste Baskets, Peerless Insulation, Materials Handling Equipment, and Textile Bobbins.

For More Information Circle No. 247 on Inquiry Card—Page 17



Are you one of these?

If you are, your source is Federated Metals . . . for one or for all non-ferrous metals.

Federated, a division of American Smelting and Refining Company, is a nationwide organization with 14 plants and 24 sales offices for better service and faster delivery.

See Federated First for all Non-Ferrous Metals.

Federated Metals Division

AMERICAN SMELTING AND REFINING COMPANY
120 BROADWAY, NEW YORK 5, N. Y.
In Canada: Federated Metals Canada, Ltd., Toronto and Montreal

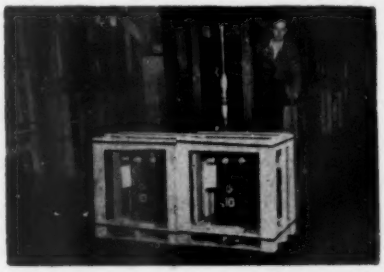
Aluminum, Magnesium, Babbitts, Brass, Bronze, Anodes, Zinc Dust, Die Casting Metals, Lead and Lead Products, Solders, Type Metals

For More Information Circle No. 248 on Inquiry Card—Page 17

New Style Shipping Crate Eases Warehousing, Handling

A completely new style shipping crate for its distribution transformers that is designed for easy handling with fork lift trucks has been announced by Allis-Chalmers Manufacturing Company.

Features of the new crate include side bracing to distribute loads and reusable built-in pallet-type base. The side bracing eliminates the need for runners when stacking units.



When crates are stacked, each one is keyed to adjacent crates above and below, permitting safer and higher stacking.

Use of the new crates in utility warehouses has also shown cost-cutting advantages due to the palletized design of the crate bottoms. Lifting two units with a single fork truck is easy because both units incline toward the center to keep the load stable. The pallet bottom can be removed and used for other materials, resulting in savings in purchase of new pallets.

Sound Waves Used to Locate Quality Defects

Jet engine parts will soon be inspected with an ultrasonic scanning instrument at the Allison Division of General Motors Corp. The device was developed for G. M. by Sperry Products Inc. of Danbury, Conn.

Here's how it works: The part to be inspected is mounted on a rotary turntable immersed in water. As it rotates, a quartz crystal transducer transmits sound toward it at a frequency of 5,000,000 vibrations per second. If there is a defect in the part, the ultrasonic wave will be reflected. This is recorded automatically on a chart. A programming attachment permits the entire scanning operation to be performed automatically.

According to Sperry engineers, the new instrument should help manufacturers of precision parts cut costs. Defects can be located prior to machining and, with the programming device, scanning is automatic.

For More Information Circle No. 249 on Inquiry Card—Page 17→



Which package is best for you?

ROEBLING HIGH CARBON WIRE is packaged in many ways... and for every kind of usage there's one particular type of packaging that will bring top handling and production efficiency... new economy in your plant. For certain wires, Roebling's new large-size reels or new disposable spoolless cores have special money-saving advantages:

The large reels are ideal for long runs. They reduce down time to a minimum.

The new spoolless core (a hollow fibre core without flanges) abolishes the storing and return of empty spools ... eliminates charges for spools and waiting for credits.

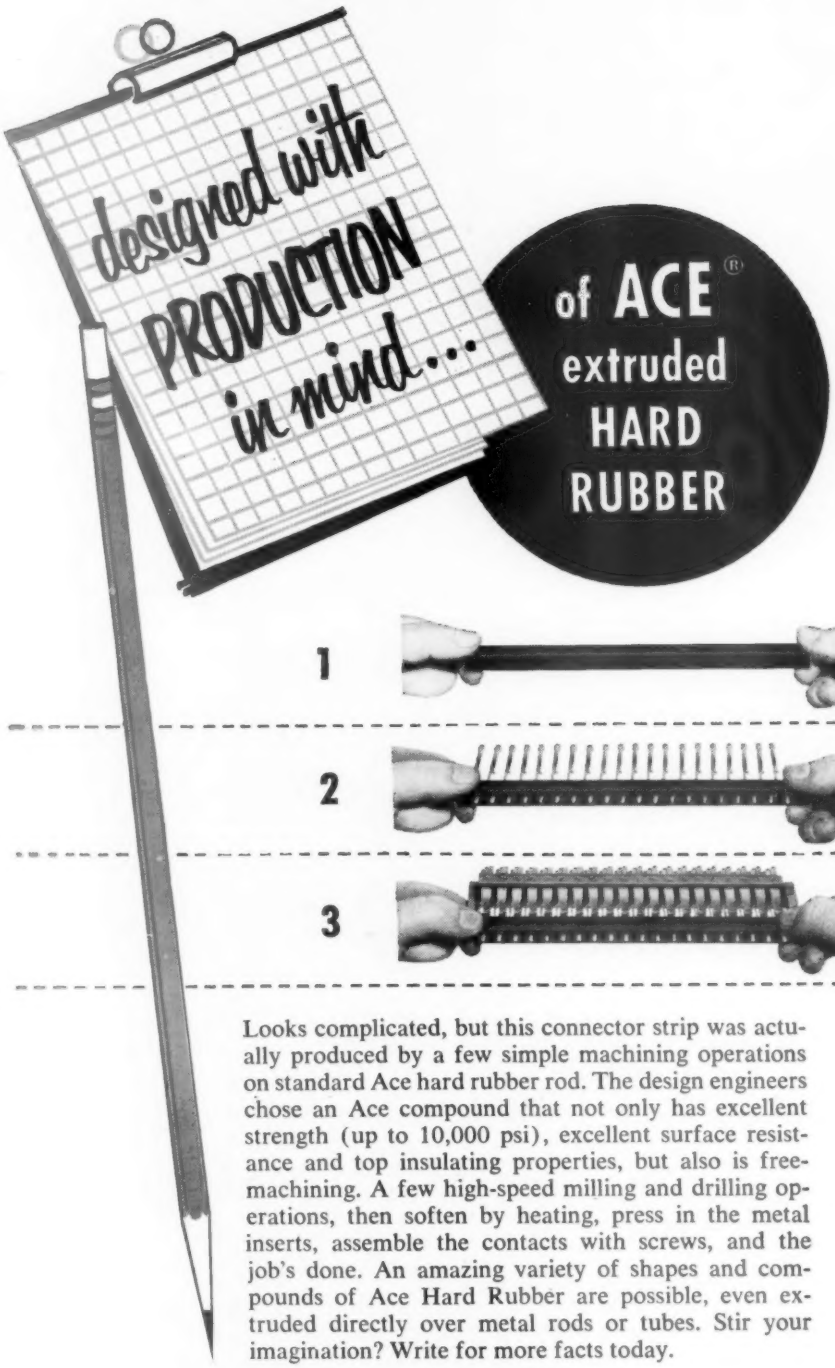
You *pay* for the best when you buy high carbon wire. Make sure you *get* it in wire and packaging. Specify Roebling. John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

ROEBLING CF&I

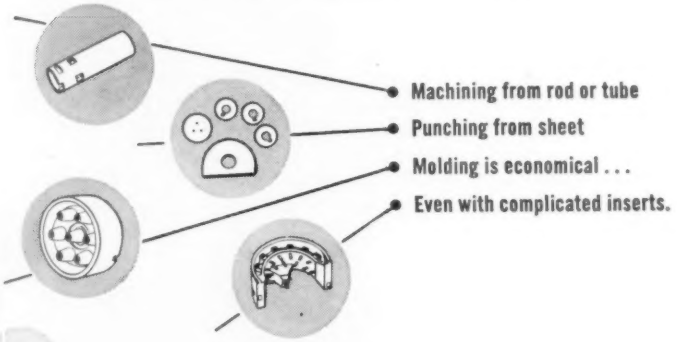
Subsidiary of The Colorado Fuel and Iron Corporation

ATLANTA, 934 AVON AVE • BOSTON, 51 SLEEPER ST & 5 PITTSBURGH ST • CHICAGO, 5525 W. ROOSEVELT RD • CINCINNATI, 3253 FREDONIA AVE • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST • DETROIT, 915 FISHER BLDG • HOUSTON, 6216 NAVIGATION BLVD • LOS ANGELES, 5340 E. HARBOR ST • NEW YORK, 19 RECTOR ST • ODESSA, TEXAS, 1920 E. 2ND ST • PHILADELPHIA, 230 VINE ST • ROCHESTER, 1 FLINT ST • SAN FRANCISCO, 1740 17TH ST • SEATTLE, 900 1ST AVE S. • ST. LOUIS, 3001 DELMAR BLVD • TULSA, 321 N. CHEYENNE ST • EXPORT SALES OFFICE, TRENTON 2, N. J.

PHOTO BY MC MANUS



Looks complicated, but this connector strip was actually produced by a few simple machining operations on standard Ace hard rubber rod. The design engineers chose an Ace compound that not only has excellent strength (up to 10,000 psi), excellent surface resistance and top insulating properties, but also is free-machining. A few high-speed milling and drilling operations, then soften by heating, press in the metal inserts, assemble the contacts with screws, and the job's done. An amazing variety of shapes and compounds of Ace Hard Rubber are possible, even extruded directly over metal rods or tubes. Stir your imagination? Write for more facts today.



ACE rubber and plastic products

AMERICAN HARD RUBBER COMPANY
93 WORTH STREET • NEW YORK 13, N. Y.

For More Information Circle No. 250 on Inquiry Card—Page 17

Titanium "Skin" On Rotor Blades Brings Big Weight Saving

Use of titanium instead of alloy steel as a skin covering for helicopter rotor blades has uncovered a phenomenal secondary weight saving. While a ship-set of six blades necessitates use of only 52 pounds of titanium, there is a resultant over-all reduction in weight amounting to 68 pounds, according to officials of Prewitt Aircraft Company, Clifton Heights, Pa., designers and manufacturers of blades.

This remarkable weight saving is brought about because the blades are mass balanced at a point one-fourth the width of the blade from the leading edge. Thus, for every unit of weight saved aft of this point, a three-fold weight reduction can be enjoyed in the forward portion —and use of the lighter rolled titanium enables removal of additional weight elsewhere in the structure.

With present day helicopters selling at upward of $75.00 per pound of pay load, the value of the weight saving in the titanium-skinned blades is more than two-thirds the cost of the blades in production.

Fire Apparatus Specifications Issued by Underwriters

Industrial firms using or planning to buy fire apparatus will be interested in a new pamphlet issued by the National Board of Fire Underwriters. Designed primarily for municipalities, the publication will also be an aid to large companies which maintain their own fire departments.

The pamphlet contains complete specifications for fire apparatus, developed by joint action of the National Board of Fire Underwriters, International Association of Fire Chiefs, and the National Fire Protection Association.

These specifications are complete except for such items as the capacity required in pumpers, the length of ladders on ladder trucks, and other items which vary according to local conditions of operation or preference. A supplementary list of basic equipment is provided for purchasers to add to the contract specifications if desired.

The pamphlet, "Suggested Specifications for Motor Fire Apparatus" (NBFU N. 19) may be obtained from the National Board of Fire Underwriters, 85 John Street, New York 38, N. Y.

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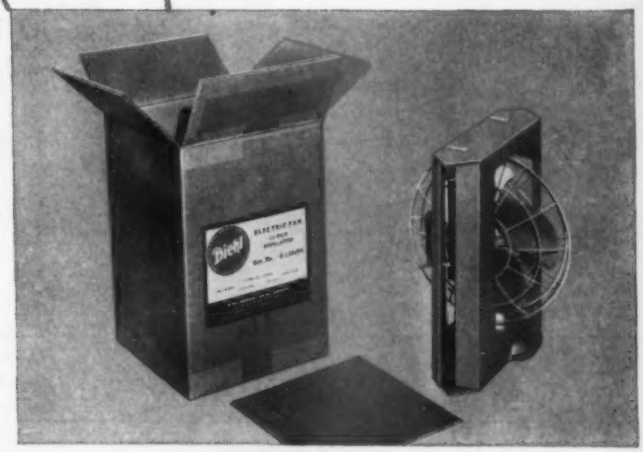
save packing
TIME





utilize
SPACE

eliminate damaging
MOTION





HINDE & DAUCH

Authority on Packaging

12 FACTORIES • 40 SALES OFFICES

Write for booklet, "How to Ship More Economically in Corrugated Boxes." Hinde & Dauch, Sandusky 26, Ohio.

Personalities IN THE NEWS

Luria Engineering Co., Bethlehem, Pa., has appointed **Charles E. Topping** as Purchasing Agent. Mr. Topping,



C. E. Topping

who has been with the Luria organization for the past eight years, is making his headquarters at the company's fabricating plant in Bethlehem.

Alanson L. Brooks has been named Assistant to the Manager of Purchasing at Kaiser Aluminum & Chemical Corporation, Oakland, Calif. Prior to



A. L. Brooks

his new assignment, Mr. Brooks was on Kaiser's Washington, D. C., staff and later project manager in Newark, Ohio, for the corporation's heavy forging press program.

Herbert B. Fox has been made Director of Purchases, and **Charles F. Kalmbach** Purchasing Agent for E. F. Houghton & Co., Philadelphia.

The new Chief Purchasing Agent at the Houston, Texas, plant of the Ethyl Corp. is **Buford Fendlason**. He replaces Willard Mitchell, who was transferred to Baton Rouge, La., and promoted to General Superintendent of Purchasing.

The new Assistant General Purchasing Agent of the Boiler Division of the Babcock & Wilcox Co., Barberton, Ohio, is **J. R. Connell**. He was formerly Assistant Purchasing Agent of the



J. R. Connell

Tubular Products Division at Beaver Falls, Pa. In addition to Mr. Connell's appointment, it was announced that **E. P. Moriarity, C. B. Warner, J. E. L. McAdam** and **G. A. Weidersheim** had been named Assistant Purchasing Agents of the Barberton works, Boiler Division.

John P. Moorhouse has been assigned the duties of Director of Purchases under his present title of Purchasing Agent at Standard Pressed Steel Co., Jenkintown, Pa. The move means he is taking on the responsibility for receiving, raw materials purchasing and stores and the buying of machinery, in addition to his regular duties. He has been purchasing agent since 1950.

Robert Underhill has been named Purchasing Agent for the Ohio Seamless Tube Division, Copperweld Steel



R. Underhill

Co., Shelby, Ohio. He has acted as Assistant Purchasing Agent since 1945.

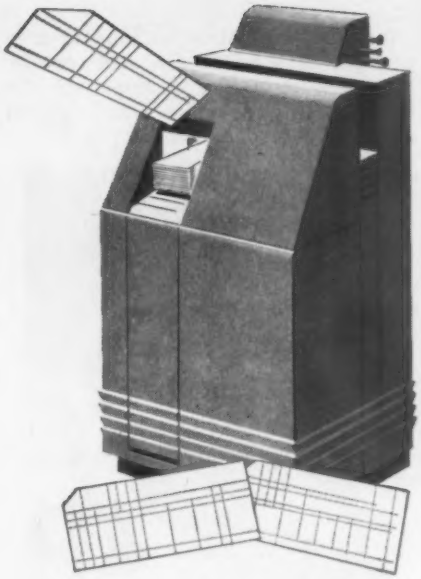
American Cyanamid Co., New York City, has named **Gailon C. Fordyce** as Assistant Director of Purchases. Mr.



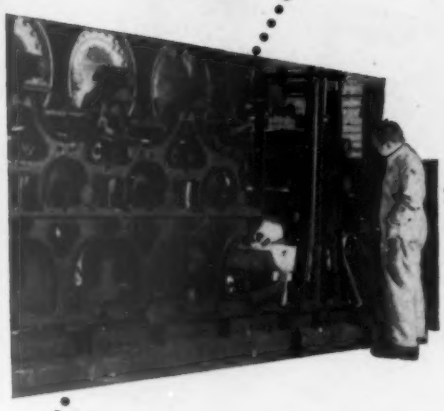
G. C. Fordyce

Fordyce, who joined the company in 1946, had been assistant to the director of purchases. He has also served as a divisional purchasing agent responsible for procurement of technical process

(*Please turn to page* 226)



IT'S YOURS when...





Here's a PAPER that... HELPS MACHINES THINK

. . . it's just one of 600 Tailor-Made Riegel Papers

"Mechanical brains" devised to ease the tedium of business mathematics often require special papers as part of their thinking processes. The unusual requirements of this field have been met many times by Riegel . . . another example of Riegel's ability to make paper for almost any need. More than 600 grades are now available. Tell us what you want paper to do for you. *Write Riegel Paper Corp., P.O. Box 250, New York 16, N. Y.*

you need something NEW in paper at low experimental cost

If you're looking for a new kind of industrial paper, this Riegel "Pilot Plant" can make an experimental run of just a few hundred pounds at extremely low cost. All you pay is a nominal charge of $25 an hour, plus the small cost of materials. Riegel contributes the research, engineering and labor to help you develop new ways to use tailor-made industrial papers.

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A special paper that sheds rain like a duck was developed by Riegel for outdoor signs. It is actually stronger wet than dry, and costs much less than fabric. Another Riegel weather-proof paper is used for golf scores, hunting licenses, nursery tags, etc. These are just a few examples of our ability to make paper to meet almost any technical requirement. More than 600 grades now available. Tell us what you want paper to do for you. *Write Riegel Paper Corp., Box 250, New York 16, N. Y.*

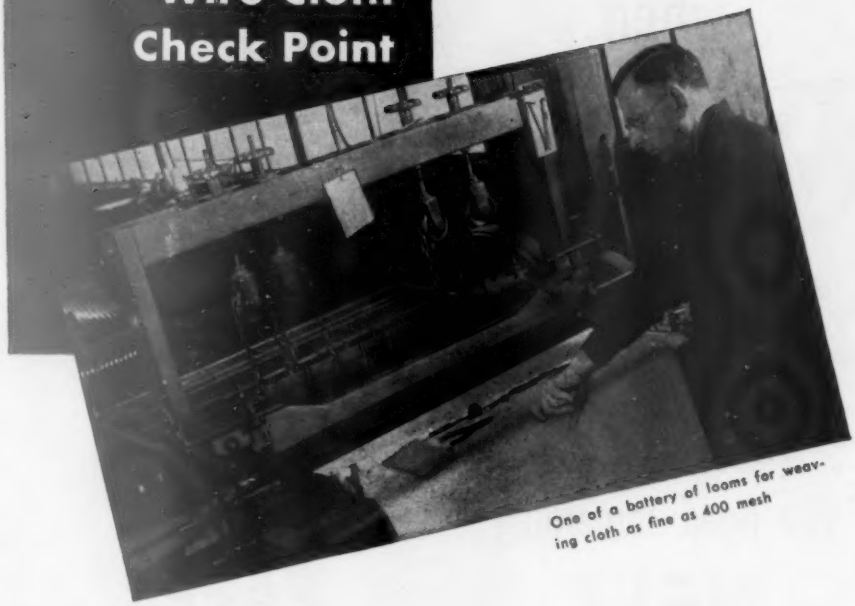
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SPECIAL PAPERS for INDUSTRY

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MAKES OVER 600 SPECIAL PAPERS FOR INDUSTRY

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SPECIAL PAPERS for INDUSTRY

For More Information Circle No. 252 on Inquiry Card—Page 17

An Important Wire Cloth Check Point



One of a battery of looms for weaving cloth as fine as 400 mesh

Weaving Precision

Our skilled workmen and precision looms combine to make precision wire cloth that meets the most rigid specifications. All shute wires are parallel and all warp wires are parallel as they must be, to assure a uniformly woven cloth with no defects. One or two open spots in a wire cloth could completely spoil the most painstaking screening operation.

In addition to its uniformity and freedom from imperfections, Newark Wire Cloth is noted for accurate mesh counts. Available in all the commercially used metals, Newark Wire Cloth is woven in sizes ranging from 4 inches (space cloth) down to 400 mesh.

We maintain a large stock of the commonly used metals and sizes, and are in a position to make prompt shipments. Let us quote on your requirements. When writing, please give us details on your process.

Send for our New Catalog E.

NEWARK for ACCURACY

Newark Wire Cloth COMPANY

351 VERONA AVENUE • NEWARK 4, NEW JERSEY

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(*Continued from page* 224)

equipment and construction. He is a member of N.A.P.A. and was recently elected general vice chairman of the organization's Chemical and Allied Products Buyers Group.



C. E. Tinkle

Stokely-Van Camp, Inc., Indianapolis, has announced the promotion of **Charles E. Tinkle** to Vice President. In his new post, Mr. Tinkle continues as Director of Purchases.

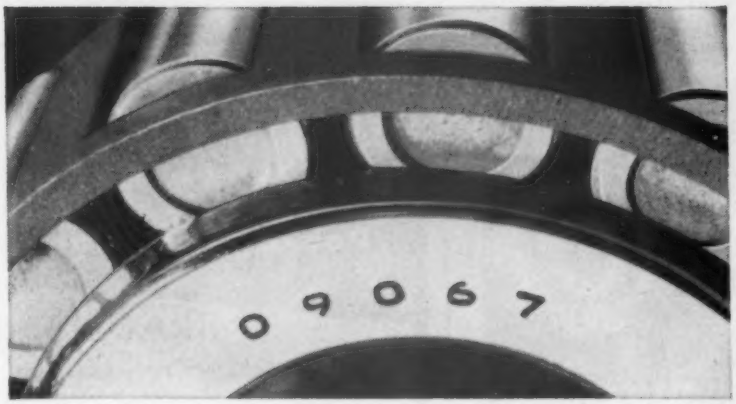
The new Director of Purchases for the Royal Metal Mfg. Co., Chicago, is **Elmer P. Behrens.** He moves to the



E. P. Behrens

newly-created post from Brunswick-Balke-Collender Co., where he was also director of purchases. Prior to that, he was assistant director of purchases of the Great Lakes Carbon Corp. and purchasing agent in charge of local purchases of Container Corp. of America. He is a member of the Purchasing Agents Association of Chicago.

FOR FURTHER INFORMATION ON PRODUCTS IN THIS ISSUE PLEASE USE INQUIRY CARD ON PAGE 17



09067 ON THIS BEARING CONE, together with 09195 on the cup, tells you it's a certain-size tapered roller bearing. But since this bearing also has the trade-mark "Timken®" stamped on it, a history goes with the number. It tells a top P.A. of the quality, service and public acceptance that go with the bearing.

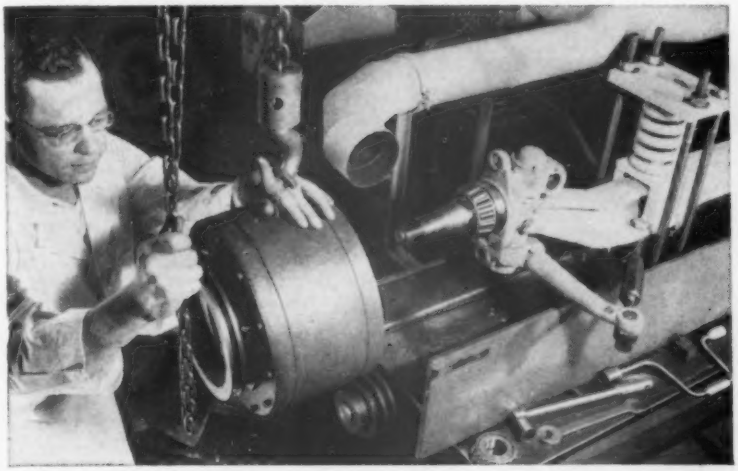
The number with a history



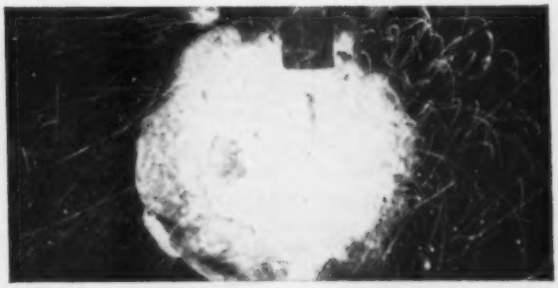
SHE'S CLOSING IN ON PERFECTION. This machine measures to a half thousandth. She uses it to check the bore size of Timken bearing cones. Result: customer gets bearings that will give him the desired fit for shaft size.



WE CASE-HARDEN EVERY RACE AND ROLLER in the world's largest battery of case-carburizing furnaces. We make bearing parts hard on the outside to resist wear, tough on the inside to take shock. It's another reason Timken bearings are the least expensive bearings in terms of performance.



WE MAKE SPECIAL TESTS to help manufacturers solve basic design problems. In this simulated service test, we run front-axle assemblies under maximum loads. It tests the bearings themselves, compares seals and lubricants, shows customers how to get longer bearing life.



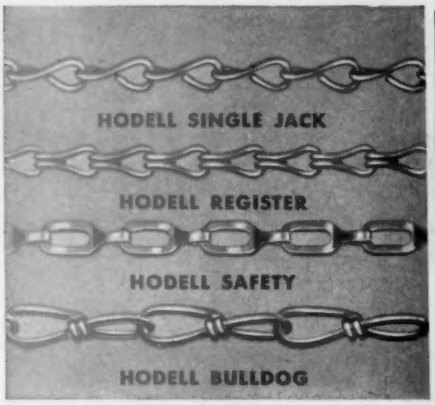
WE MAKE OUR OWN STEEL—to control quality from the start. Shown here: a sample for lab analysis. No other bearing company in the U.S.A. makes its own steel. It's another reason for specifying "Timken" with the bearing number. Quality, service and public acceptance make Timken bearings your number 1 value. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian Plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

Quality, service and public acceptance make TIMKEN number 1 for VALUE

TRADE-MARK REG. U.S. PAT. OFF

NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION

For More Information Circle No. 254 on Inquiry Card—Page 17



HODELL

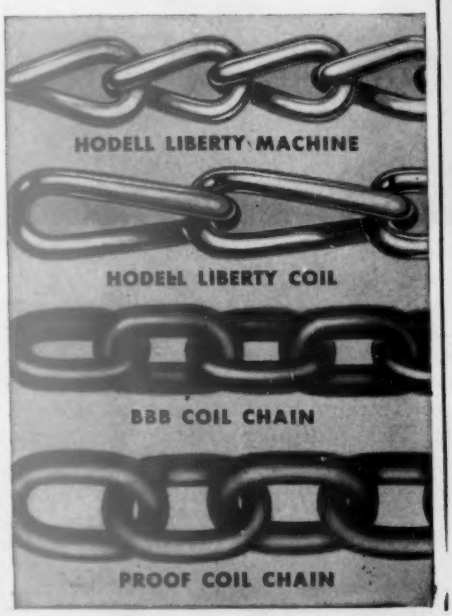
WELDED AND WELDLESS

CHAIN

for every purpose

When you buy chain . . . be sure to buy from the quality line of Hodell Chain that includes types and sizes for every industrial use. Hodell also manufactures many formed wire specialties and can make chain assemblies to your specifications. Hodell welcomes the opportunity to quote on your requirements. Write for the Hodell Chain catalog, giving complete information.

HODELL CHAIN COMPANY
Cleveland 3, Ohio
Div. of The National Screw & Mfg. Co.



For More Information Circle No. 255
on Inquiry Card—Page 17

Schenley Industries, Inc., Cincinnati, has promoted **Ned Drucker** to the position of Director of Purchases. During



N. Drucker

his 18 years with Schenley, Mr. Drucker has served as production supervisor and engineer, manager of engineering and manager of bottling operations.

The new Purchasing Agent for the southern divisions of the National Mine Service Co., Beckley, W. Va., is **Charles F. Barefoot.** He will supervise purchasing operations for the Bemeco Division, Beckley; All-State Division, Logan, W. Va.; Ashland Division, Ashland, Ky.; Kentucky-Virginia Division, Jenkins, Ky.; and Western Kentucky Division, Madisonville, Ky. He was formerly an expediter in the purchasing department and will headquarter in Beckley.

The appointment of **A. T. Biel** as Purchasing Agent of the Ashtabula chemical plant of the General Tire &



A. T. Biel

Rubber Co., Akron, has been announced. He was formerly associated with the Electric Autolite Co. and Acme Specialty & Mfg. Co. He is a member of the National Association of Purchasing Agents, American Institute of Management and the American Society of Tool Engineering.

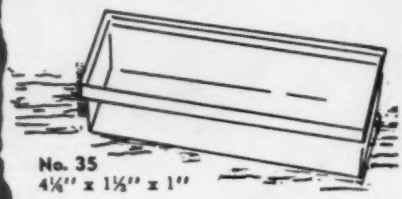
Don't be afraid to change that Package Design

BRADLEY

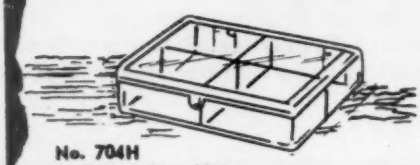
has a rigid plastic box for your product



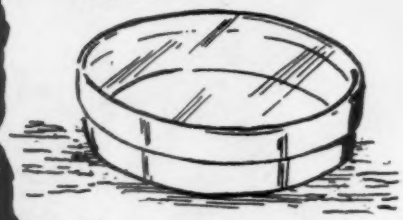
Series 300
8¼" x 4¼" x 1¼"
(assorted compartments)



No. 35
4¼" x 1½" x 1"



No. 704H
2 7/8" x 2" x ½"
4 compartments.



No. 32
2¾" diam. x 5/8" deep

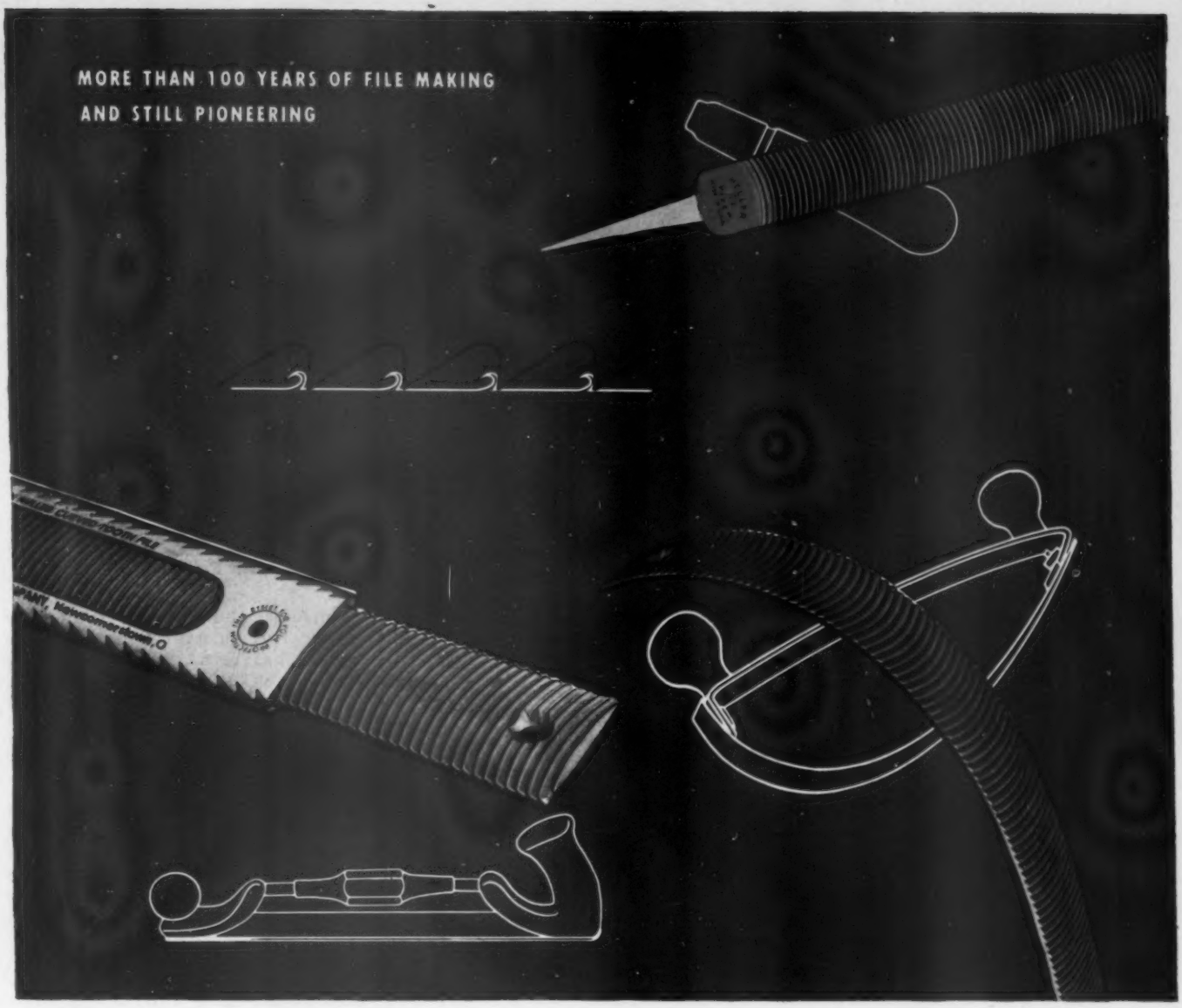
Industrial manufacturers, especially of components, are utilizing our boxes for packaging. We have over 500 rigid polystyrene boxes available FROM STOCK MOLDS, or we will design a box to meet your specific requirements.

Send for illustrated catalog, showing box dimensions . . . you're cordially invited to visit our new factory and showrooms when in Chicago.

World's Largest Assortment of Rigid Plastic Boxes

BRADLEY INDUSTRIES
1650-56 North Damen Ave.
Chicago 47, Ill.

For More Information Circle No. 256
on Inquiry Card—Page 17



HELLER WAS FIRST WITH *VIXEN** MILLED CURVED-TOOTH FILES

Originated by Heller Brothers over 35 years ago, the Vixen still stands as the greatest single improvement ever made in metal finishing files. Each curved-tooth is actually a miniature milling cutter. Vixen cuts faster, freer, finishes smoother. File clears easily even when used on soft, non-ferrous metals or fibrous materials. Famous Vixen is only one of many Heller contributions to better filing. Over a century of continuous inspecting, testing and improving guarantees users of Heller files "the best."

other Heller Firsts

NUCUT* Wavy-Teeth Files
SPIRAL-CUT Half Round Files
WAVY-TEETH* Double Cut Mill and Saw Files

**Registered T.M.*

VIXEN
American-Swiss
NUCUT

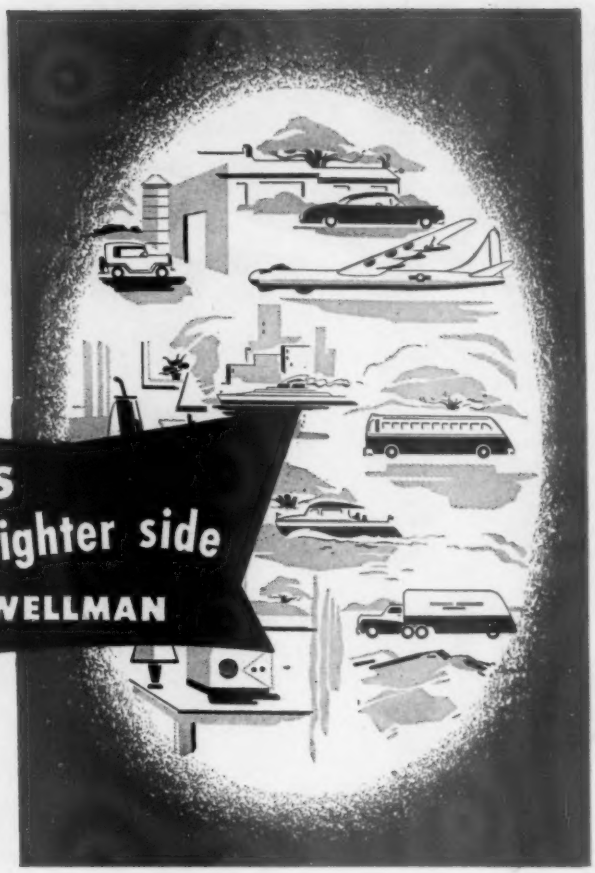
THESE 3 FAMOUS BRANDS ARE MADE ONLY BY

HELLER BROTHERS TRADE MARK SINCE 1839

HELLER BROTHERS CO. *America's Oldest File Manufacturer* **NEWCOMERSTOWN, OHIO**

YOUR *HELLER* DISTRIBUTOR CAN SUPPLY ALL YOUR FILE NEEDS

For More Information Circle No. 257 on Inquiry Card—Page 17



Chances are no matter what business you're in . . .

manufacturing household appliances . . .

providing transportation for people or products . . .

producing farm equipment, or textile equipment, or portable tools . . .

there's a WELLMAN aluminum or magnesium casting somewhere in the picture.

For almost half a century we've been producing castings on the lighter side to fill a wide range of specifications — and we know what it takes to do it. We know the importance of constant research and laboratory control, of the finest production methods and equipment, and of experienced people in all departments.

Our four complete plants and staff of competent personnel are geared to meet any castings requirement. Let us hear about yours.

New catalog No. 53 on request.

Well-Cast MAGNESIUM AND ALUMINUM CASTINGS
Well-Made WOOD AND METAL PATTERNS

THE WELLMAN BRONZE & ALUMINUM CO.
Dept. 17 12800 Shaker Boulevard Cleveland 20, Ohio

For More Information Circle No. 258 on Inquiry Card—Page 17

The appointment of **H. F. Froehlich** as Manager of the newly formed Implement Purchasing Department, Tractor and Implement Division, Ford Motor Co., Birmingham, Ala., has been announced. Mr. Froehlich has



H. F. Froehlich

been Assistant Purchasing Agent since joining Ford in August, 1953. Prior to that he had been assistant purchasing manager of Dearborn Motors Corp. From 1928 to 1948 he was associated with the Packard Motor Car Company in the Production Control Department and the Purchasing Department.

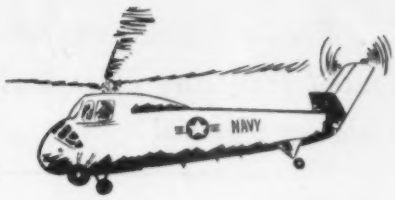
Freeman B. Hudson, Jr., has joined the Plastics and Resins Division of American Cyanamid Co., New York City, as Purchasing Agent. Prior to joining Cyanamid, he was with the United States Rubber Company, for 10 years, as a senior buyer of raw material chemicals. Previously, he was assistant purchasing agent for the government-owned Lake Ontario Ordnance Works. He also served as an industrial engineer and buyer of machinery and other equipment for Colgate-Palmolive-Peet.



C. P. Masure

Lindberg Engineering Co., Chicago, has named **C. P. Masure** as Purchasing Agent in its newly formed Field-erected Equipment Division. Mr. Masure was previously with Continental Industrial Engineers, Inc.

Why do most types of 'copters fly with Lycoming-built engines?



Lycoming-powered Sikorsky S-58 Anti-Submarine 'Copter*



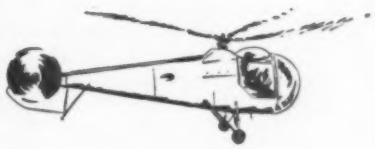
Lycoming-powered Piasecki H-21 Matériel and Troop Transport*



Lycoming-powered Kaman HTK-1 Military Trainer



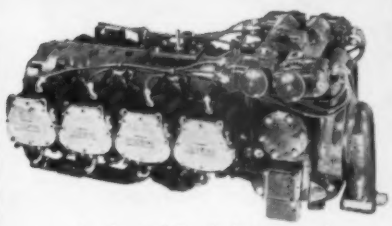
Lycoming-powered Doman L-Z5 General Utility 'Copter



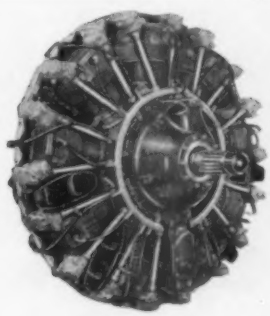
Lycoming-powered Brantly Model B-2 Personal 2-place 'Copter



Lycoming-powered Glenview FlyRide Personal 2-place 'Copter



4-, 6-, and 8-cylinder opposed air-cooled engines.



*7- and 9-cylinder radial air-cooled engines.**

LYCOMING TURBINE ENGINES

Still "under wraps," being developed for the Military. Lycoming's new "pioneers" that promise greater efficiency, greater economy, more brilliant performance than any helicopter engines ever before developed.

*Wright-Cyclone engine, built by Lycoming under license from Curtiss-Wright Corporation, Wright Aeronautical Division.

The answer is simple: Lycoming builds more types of power plants designed for varied types of helicopters than any other engine manufacturer. Some users are shown above.

Since 1940—when Lycoming powered the pioneering Vought-Sikorsky 300—Lycoming has produced engines ranging from 135 to 1500 horsepower. And they have been designed for horizontal, angular, and vertical mounting.

If your problem is air-cooled power . . . precision parts . . . volume fabrication . . . or "just an idea" in the rough or blueprint stage that needs development . . . *look to Lycoming*. Long famous for metal-working skills, Lycoming meets the toughest specifications of exacting customers, both industrial and military.

FOR RESEARCH • FOR PRECISION PRODUCTION

LOOK TO **Lycoming**

DIVISION OF AVCO MANUFACTURING CORPORATION

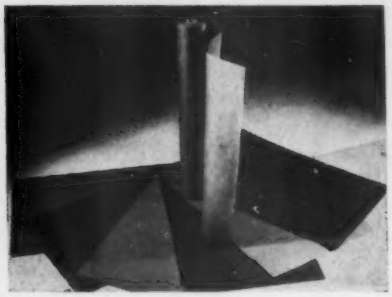
STRATFORD, CONN., Manufacturing plants in Stratford, Conn. and Williamsport, Pa.

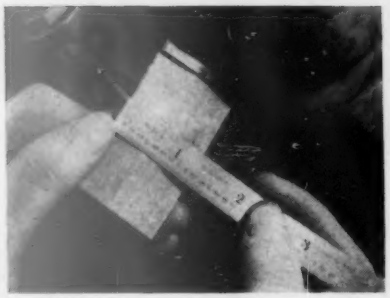
AIR-COOLED ENGINES • PRECISION PARTS • TURBINE RESEARCH & DEVELOPMENT

For More Information Circle No. 259 on Inquiry Card—Page 17

USERS OF ELECTRICAL INSULATION PARTS:

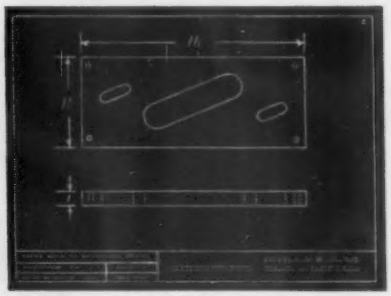
. . . When you need parts fabricated from any electrical insulating material

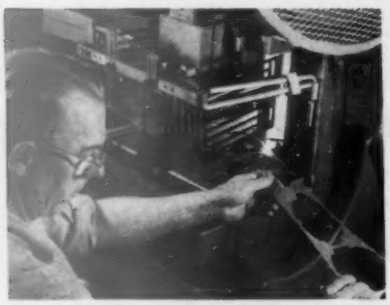




. . . and fabricated with precision accuracy

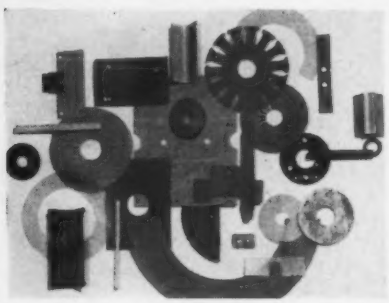
. . . to your exact specifications





. . . on moneysaving, high-speed, modern equipment

. . . that make your insulation parts





. . . to fit perfectly your electrical product and requirements

Specify **Inmanco**®

FABRICATED ELECTRICAL INSULATION PARTS—ASK FOR LITERATURE TODAY

INSULATION MANUFACTURERS CORPORATION

*CHICAGO 6	*CLEVELAND 14	DAYTON 2	MILWAUKEE 2	PITTSBURGH 22
565 W. Washington Blvd.	1231 Superior Ave., N. E.	120 W. Second St.	312 E. Wisconsin Ave.	535 Smithfield Street
Phone CEntral 6-7320	Phone SUperior 1-2310	Phone Michigan 1391	Phone DAly 8-5359	Phone GRant 1-7100

— AUTHORIZED REPRESENTATIVES —

*CHICAGO 6	DETROIT 2	*MINNEAPOLIS 3	PEORIA
Complete-Rending Elec. Co. Inc.	Harry R. Breiheu	H. A. Holden, Inc.	W. C. Johnson
100 S. Jefferson St.	15 Lawrence Ave.	1200 Harmon Place	101 Heinz Court
Phone CEntral 6-5390	Phone TOwnsend 8-2577	Phone Geneva 5353	Phone 2-7786

*LOCAL STOCKS AVAILABLE AT THESE LOCATIONS

For More Information Circle No. 260 on Inquiry Card—Page 17

Robert E. DePatie is now Production and Procurement Manager for Industrial Sound Control, Inc., Hartford,



R. E. DePatie

Conn. For the past year, Mr. DePatie has been serving as materials control supervisor of the acoustical engineering and manufacturing firm.

Winfield Shiras, III, has been named Purchasing Agent for the Meter Division of Westinghouse Electric Corporation, Pittsburgh. After completing the Westinghouse graduate student training program, Mr. Shiras was assigned to the purchasing office of the company's East Pittsburgh plant, where he served as purchasing engineer and as a supervisory buyer. In 1952, he was named assistant purchasing agent for the Westinghouse Small Motor Division at Lima, Ohio. Later, he was appointed staff assistant at the company's headquarters purchasing office.

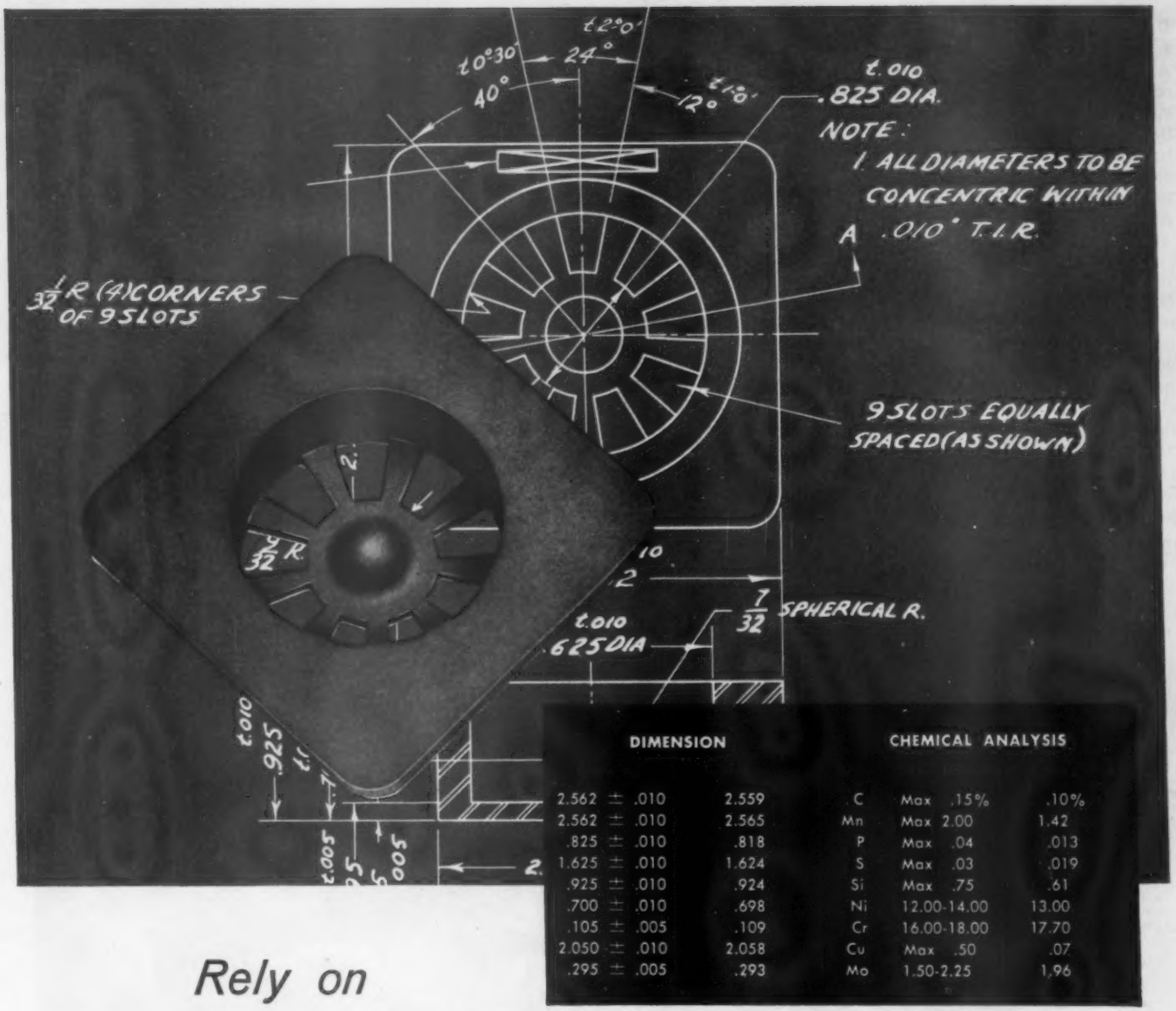
Richard W. Bartlett has been named Director of Purchasing and Production Planning at all the plants of the Mather



R. W. Bartlett

Spring Co., Toledo. A graduate of Chicago Loyola University, Mr. Bartlett was production control manager of A. O. Smith Corp. where he was affiliated

(*Please turn to page* 236)



DIMENSION		CHEMICAL ANALYSIS		
2.562 ± .010	2.559	C	Max .15%	.10%
2.562 ± .010	2.565	Mn	Max 2.00	1.42
.825 ± .010	.818	P	Max .04	.013
1.625 ± .010	1.624	S	Max .03	.019
.925 ± .010	.924	Si	Max .75	.61
.700 ± .010	.698	Ni	12.00-14.00	13.00
.105 ± .005	.109	Cr	16.00-18.00	17.70
2.050 ± .010	2.058	Cu	Max .50	.07
.295 ± .005	.293	Mo	1.50-2.25	1.96

Rely on

Crucible ACCUMET investment castings

for dimensional and metallurgical accuracy . . .

This intricately shaped aircraft instrument part had to be held to rigid specifications both in size and in chemical analysis of the steel.

That's why Crucible ACCUMET® precision castings were used. For Crucible's *lost wax* method of casting, and its long experience as the country's leading producer of fine special purpose steels, combine to bring you accurate castings of the highest quality. But the two tables shown below actually tell the story better than words can. They show how closely ACCUMET castings are held to original specifications.

The next time you have a job where quality and close tolerances are needed, be sure to investigate the advantages of ACCUMET precision castings — *call Crucible.*



CRUCIBLE

first name in special purpose steels

54 years of Fine steelmaking

ACCUMET INVESTMENT CASTINGS

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.

REX HIGH SPEED • TOOL • REZISTAL STAINLESS • ALLOY • MAX-EL • SPECIAL PURPOSE STEELS

Canadian Distributor — Railway & Power Engineering Corp., Ltd.

For More Information Circle No. 261 on Inquiry Card—Page 17

Delivering industrial "breath"—Oxygen supply and servicing is as important as its unit price and purity. Airco customers get a dependable, flexible supply service from a network of 70 producing plants situated strategically throughout the country. Delivery, by bulk truck (far right), in cylinders, or by direct pipeline is quick and dependable. Right: valve opening ceremony last year at the new Airco liquid oxygen plant, Butler, Pa. These pipelines deliver oxygen to Armco Steel and Pullman Standard steel plants.



New welding process speeds production — Among industry's newest production tools is the Aircomatic® process. The method greatly increases the speed with which good welds can be made in a wide variety of metals and alloys, including "problem" materials like aluminum and stainless steel. This photograph shows the inert-gas-shielded metal arc of an automatic Aircomatic head welding truck-trailer dolly wheels from press-stamped SAE 1020 steel at Youngstown Steel Car Corp., Niles, Ohio. Oxygen plays an important part here as an additive to the shielding gas.





Most dramatic use of oxygen — Flame cutting is perhaps the most spectacular industrial application of oxygen . . . as useful as it is striking. The oxygen-acetylene flame used generates 6300°F-heat. This temperature permits cutting metal thicknesses ranging from sheet to heavy ingots. Here, an operator at Brown-Wales Co., New England steel warehousing firm, cuts steel plate with an Oxygraph equipped with Electronic Tracer, one of the Airco precision machines that has brought flame cutting to a peak of usefulness.

AIRCO®



Airco Oxygen Tent for Industry

The vital importance of oxygen to industry is relatively new. Forty years ago, the market for oxygen in cutting and welding and allied uses was virtually nonexistent. The rapid growth of industrial oxygen consumption has been nourished by three conditions: an expanding economy, the wider use of *any* effective product in healthy conditions of economic expansion, and the development of new and improved tools and techniques whose effectiveness depends on oxygen. For details of these and other applications of Airco products, write for a sample copy of the magazine, "Airco in the News."



Oxygen in the glass industry — Insatiable demand for light bulbs, electronic tubes, and similar glass components has brought modern mass production methods to the old art of the glass blower. This "sealing-in" machine at Sylvania Electric Products, Inc. seals bulbs and mounts into 150-watt inside frosted incandescent lamps at a 1500-per-hour rate. A mixture of oxygen-enriched air and natural gas provides the right flame shape and temperature in the jets that soften the throats of the bulbs prior to sealing.



Needling steel for production economy—Oxygen has replaced iron ore as an oxidizing agent in most steel mills with electric furnaces. Here at Mid-Continent Steel Castings, Shreveport, La., a long pipe injects the oxygen directly into the molten steel. Advantages of this Airco-pioneered process are savings in time, power, furnace electrodes and valuable alloy elements. Other oxygen applications include flame cutting of heavy scrap, scarfing, flame cleaning, oxyacetylene welding, dehydrating, hardfacing, and gas hot topping of ingots.

AT THE FRONTIERS OF PROGRESS YOU'LL FIND

AIR REDUCTION



60 East 42nd Street • New York 17, N. Y.
Air Reduction Sales Co. • Air Reduction Pacific Co.
Represented Internationally by Airco Company International
Divisions of Air Reduction Company, Incorporated

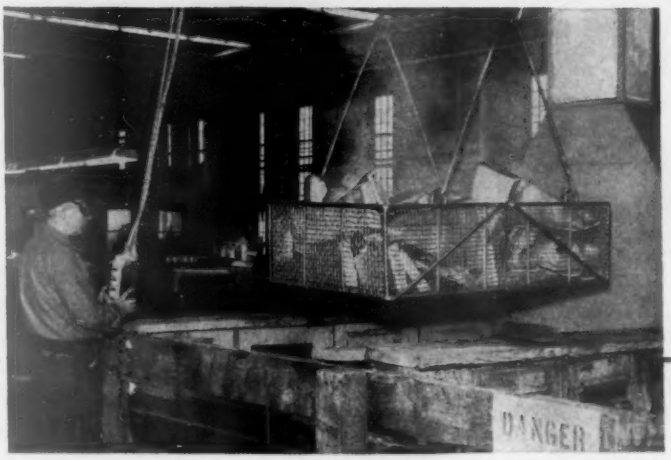
OFFICES AND DEALERS IN MOST PRINCIPAL CITIES

For More Information Circle No. 262 on Inquiry Card—Page 17

ROLOCK
FABRICATED ALLOYS

BASKET SERVICE THAT'S HARD TO BEAT

AT WILLYS MOTORS, INC. ALUMINUM FORGE DIVISION



Shown in action is one of 24 similar stainless steel etch baskets designed and fabricated by Rolock Incorporated. Dimensions are 6′ x 3′ x 16½″; load is 500 lbs. of aluminum forgings . . . thru the following 6-cycle operations:

A. Acid pickle, 10% sulphuric acid, 3% chromic acid solution at 160° F.
B. Cold water rinse.
C. Etch in 10%-15% caustic solution at 160°-180° F.
D. Cold water rinse.
E. Bright dip in 10% sulphuric acid, 3% chromic acid solution at 160° F.
F. Hot water rinse.

EACH BASKET has been subjected to an average of 125 cycles per month for more than SIX YEARS . . . and they're still going strong . . . after a total of about 10,000 cycles. THAT IS SERVICE!

This Case History is another demonstration of the value of Rolock engineered-to-the-job, fabricated-welded design and construction of containers for handling metal parts.

Extended service life reduces costs materially, improves the work, cuts time. Rolock design and construction raises the ratio of load to basket weight, thus again reducing costs.

Rolock engineers welcome your inquiries for baskets, trays, racks, crates, fixtures, retorts, muffles, vessels, kettles, etc., for heat and corrosion resistant applications.

Send your tough problems to us for solution. We welcome the challenge.

SALES AND SERVICE REPRESENTATIVES FROM COAST TO COAST

ROLOCK INC. • 1272 KINGS HIGHWAY, FAIRFIELD, CONN.

JOB-ENGINEERED for better work
Easier Operation, Lower Cost

6RL54B

(*Continued from page* 232)

for five years. With Barnes & Reinecke of Chicago from 1946-1949, he was senior industrial engineer and also did free-lance engineering in organization, job evaluation and production control. Previously, Mr. Bartlett spent 1942-1946 with the Douglas Aircraft Co., Park Ridge, Ill. He was one of the three engineers who set up manufacturing control in the Chicago area and had charge of manufacturing control installation.

Joseph J. Havrilla has been made Purchasing Agent of the Electric Auto-Lite Company's Wire and Cable Division in Hazelton, Pa. Mr. Havrilla has been with Auto-Lite since 1950.

The F. W. Wakefield Brass Co., Vermilion, Ohio, has appointed **Earl C. Furgason** as Assistant to the Purchasing Agent. Mr. Furgason joined Wakefield in 1953 and was previously associated with Sherwin-Williams.



E. C. Furgason

Idaho Power Co., Boise, Idaho, has appointed **N. L. Scott** as Purchasing Agent. Mr. Scott replaces J. O. Malvin, who is retiring after 33 years of service with the organization.

William McBee has been appointed Purchasing Agent of the Helipot Corp., a division of Beckman Instruments, Inc., South Pasadena, Calif. Mr. McBee was formerly associated with the Proto Tool Co.

Take Advantage of this Special Service. Get More Information on Any Product. Use The INQUIRY CARD Page 17



KEEPS FIRE DAMAGE COSTS DOWN!

Among the many types of up-to-date, fully approved fire protection equipment manufactured by C-O-TWO, the following comprise the principal items on the market today:

- carbon dioxide type hand and wheeled portable fire extinguishers
- dry chemical type hand and wheeled portable fire extinguishers
- carbon dioxide type hose rack and hose reel fire extinguishing units
- built-in high pressure carbon dioxide type fire extinguishing systems
- built-in low pressure carbon dioxide type fire extinguishing systems
- built-in smoke fire detecting systems
- built-in heat fire detecting systems
- high pressure carbon dioxide cylinder recharging equipment

Today's high costs and delayed replacements make it more and more a "must" for you to obtain the lowest insurance rate and the maximum in fire protection at a justified all over expenditure.

There is a personal sense of responsibility inherent with C-O-TWO Fire Protection Engineers that assures you of fully adequate firesafety... a definite plus in your behalf. Whether it's fire detecting or fire extinguishing... portables or built-in systems... C-O-TWO means top quality backed by experienced engineering that results in operating superiority for you at all times.

With C-O-TWO Fire Protection Equipment, simplicity, practicability, longevity and minimum maintenance are built-in features that guarantee fast, positive action the instant fire strikes. Furthermore, extensive manufacturing and field installation skills, together with approvals such as the Underwriters' Laboratories, Inc., Factory Mutual Laboratories, Armed Forces and Government Bureaus assure you of the finest in modern fire protection equipment.

WHEN BUSINESS STOPS . . . INCOME STOPS!

Don't take chances with your investment. Secure the benefits of highly efficient fire protection engineering today!.. our extensive experience over the years is at your disposal without obligation. Get the facts now!

C-O-TWO FIRE EQUIPMENT COMPANY
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For More Information Circle No. 264 on Inquiry Card—Page 17

INDUSTRIAL Developments



Inland Steel Co., Chicago, will have an annual production capacity of 5,000,000 tons of ingots or more by next January, the official date for rating steel mill capacities, according to a company announcement. The company's present rated capacity is 4,700,000 tons. Originally boosting its production from 3,750,000 tons to 4,500,000 tons with its 1950 expansion program, Inland Steel claims that new techniques and enlargement of old furnaces will add an additional 200,000 tons to the annual capacity of the company.

The General Electric Co., Schenectady, N. Y., will build a new $5,000,000 plant at Shelbyville, Ind., to manufacture industrial furnaces, induction heating equipment and heating devices. When completed in 1955, it will handle manufacturing operations now located at Schenectady and Pittsfield, Mass. Located on a 50-acre site, it will include a two-story office structure fronting a one-story manufacturing area with 170,000 sq. ft. of factory floor space. The entire plant will total nearly 250,000 sq. ft. The office area will be air-conditioned and a completely equipped engineering laboratory will also be included.

Kaiser Engineers Division of Henry J. Kaiser Co., Oakland, Calif., has acquired the exclusive rights in the United States for the European oxygen steelmaking process. The new oxygen converter process combines the high tonnage, low cost features of the Bessemer process with the high quality of the open hearth furnace.



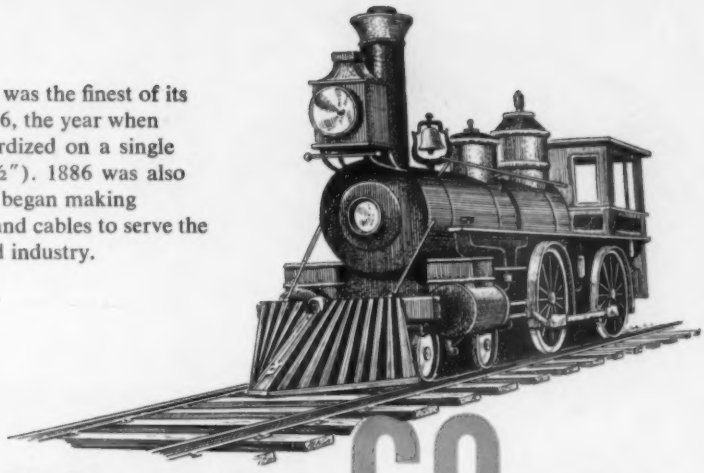
INDUSTRIAL BUYERS at the recent convention of the National Association of Purchasing Agents were interested visitors at the Conover-Mast Purchasing Directory exhibit. The booth was one of the 75 featured in the convention Inform-A-Show.

Expansion and modernization, including a warehouse with storage space for more than 17 million tin cans, has been completed at the Houston, Texas, plant of the **Continental Can Co., New York City.** A new truck-loading dock has been added and all packing equipment has been rebuilt and re-installed. Other improvements include the installation of an automatic conveying system to take cartons directly into freight cars at any location on the loading dock.

Recently completed, the new $4,500,000 Fort Worth, Texas, plant of **Chicago Pneumatic Tool Company** is in full production on a complete line of oil well drilling equipment. The plant consists of three attached buildings; a 200 x 600′ manufacturing building; a 35 x 200′ office section; and a 36 x 67′ cafeteria. Factory and cafeteria walls are concrete block to the windows and corrugated asbestos above to the roof. The office building walls are clay tile with brick facing. The factory floor is a "floated" reinforced concrete slab finished with 3″-thick edge grain wood block laid in asphalt in the work areas. Ventilation is supplied by roof fans and projected through adjustable diffusers at a relatively high velocity so as to cover a wide area.

Pennsylvania Salt Manufacturing Co., Philadelphia, has more than doubled its capacity for the production of anhydrous ferric chloride. Pennsalt's Industrial Chemicals Division is now operating its new plant at Wyandotte, Mich.

Riverside Manufacturing & Electrical Supply Co., Dearborn, Mich., has expanded facilities for the production of wiring harnesses and other electrical components through the purchase of all the machinery, equipment and materials formerly used by Pioneer Wire Products, Detroit.



This locomotive was the finest of its type back in 1886, the year when railroads standardized on a single gauge (4 ft., 8½"). 1886 was also the year "U. S." began making electrical wires and cables to serve the growing railroad industry.

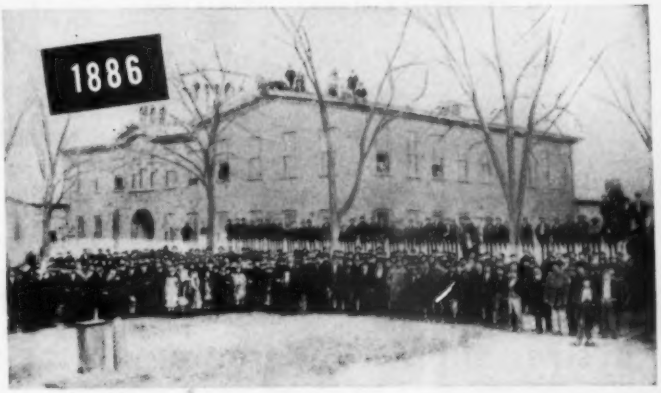
In step with America's Railroads for 68 years

U. S. Electrical Wires and Cables

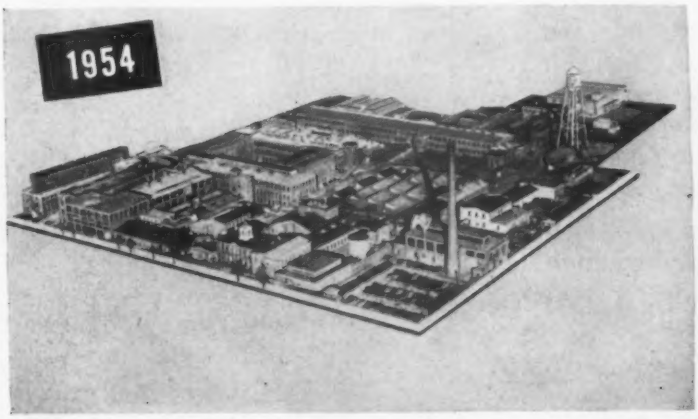
Year by year, America's railroads become more and more dieselized and electrified. That steps up the demand for electrical wires and cables. But it also means that manufacturers have to turn out wires and cables of tougher specifications, greater durability, wider versatility. The tremendously complex centralized traffic control systems and other "push-button" devices need the finest wires and cables obtainable.

United States Rubber Company is right in the middle of this tremendous railroad electrification growth. For 68 years "U.S." has been supplying railroads with the wires and cables required—as well as *anticipating* future demands. "U.S." has gone along side by side with the railroads, as they grow into an ever stronger national transportation system—a system unmatched in economy, efficiency and safety.

"U.S." is the only wire and cable manufacturer growing its own natural rubber, making its own synthetic and plastic compounds. Through this unequaled *control of manufacture,* "U.S." can always guarantee *superior insulation* in every type of wire and cable it produces.



Above is the United States Rubber Company wire and cable factory in 1886. Below (left) as it looks today.





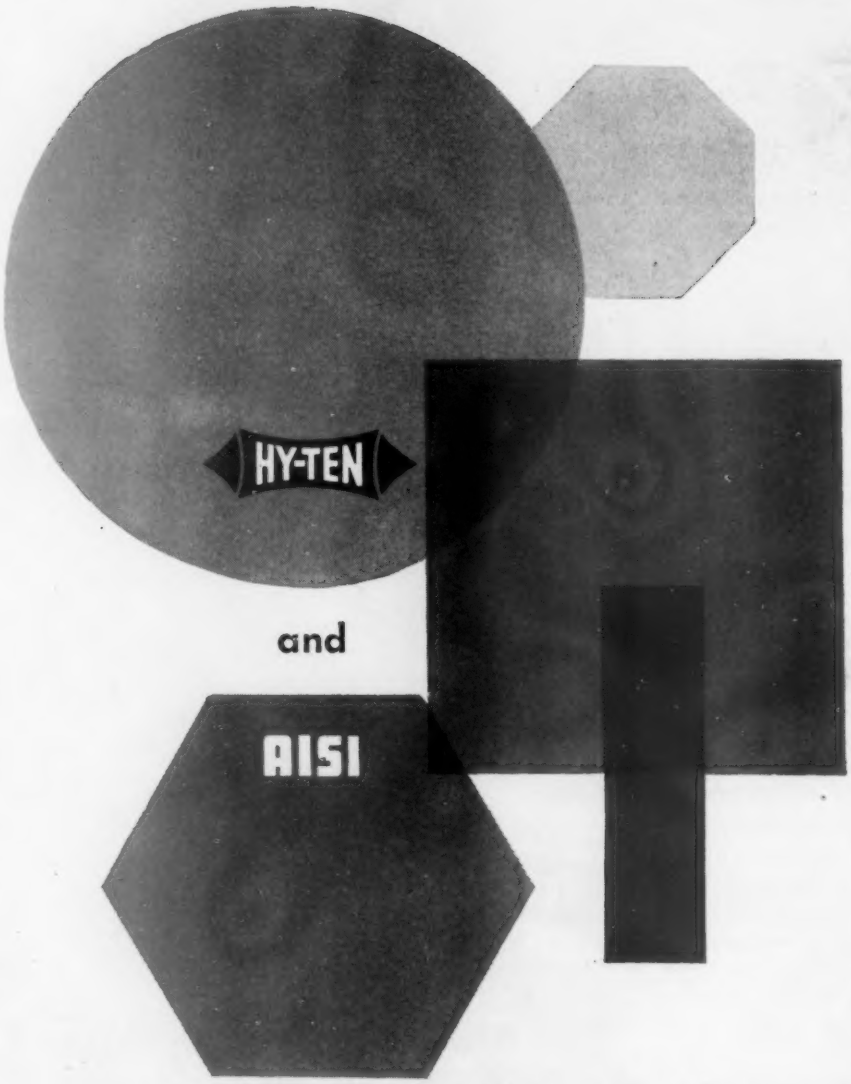
Just as this up-to-the-minute Diesel typifies the advancement in locomotion, so also "U. S." electrical wires and cables typify leadership in their field, as they have for 68 years.

US RUBBER

UNITED STATES RUBBER COMPANY

ELECTRICAL WIRE AND CABLE DEPARTMENT • ROCKEFELLER CENTER, NEW YORK 20, N. Y.

For More Information Circle No. 265 on Inquiry Card—Page 17



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For More Information Circle No. 266 on Inquiry Card—Page 17

Stretching skyward, near Copper Cliff, Ont., Canada, is the massive chimney of the new plant being built by **International Nickel Company of Canada, Ltd.** Soaring 615 ft. above a base 22 ft. high, the chimney is the proper diffusion of waste gases. The new plant will be used for recovering high-grade, by-product iron ore from nickel ores mined in the Sudbury District. Initially treating 1,000 tons a day of nickel-bearing pyrrhotite removed from ore in the early stages of processing at Copper Cliff, the $16,000,000 plant will release smelter capacity enabling Inco to deliver 120,000,000 lbs. of defense-vital nickel to the U. S. Government over the next five years.

A plasticizer's bulk station, the sixth in a program to provide faster deliveries and greater selection, has been established at Greensboro, N. C., by the **Organic Chemicals Division, Monsanto Chemical Co., St. Louis, Mo.**

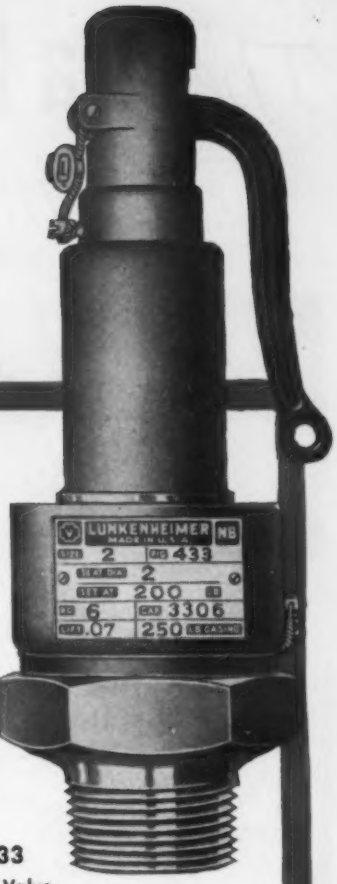
Commercial quantities of para-tertiary-butylbenzoic acid are now being produced at the Martinez, Calif., plant of **Shell Chemical Corp., New York City.** The acid, a chemical intermediate, is made by blowing air through hot liquid p-tert-butyltoluene in the presence of a metallic catalyst. The Martinez unit is the first full-scale commercial plant designed to prepare a monobasic aromatic acid by a one-step oxidation process, according to Shell.

Plans for a new aluminum foil and sheet plant in the Philippine Islands have been announced by **Reynolds Metals Co., Louisville, Ky.** A five-acre tract, located just outside Manila in the Mandaluyong District, will have a plant containing 65,000 sq. ft. of manufacturing area. The company will be known as the Reynolds Philippines Corp.

Merritt-Chapman & Scott Corp., New York City, has been awarded the contract for construction of the substructure of the new Hudson River bridge at Kingston, N. Y., according to the New York State Bridge Authority. The Kingston-Rhinecliff bridge will be 7,793 ft. long from abutment to abutment, with a 36-foot roadway flanked by two-foot walks. The substructure work will include building the bridge's 30 twin-shafted piers of reinforced concrete, eight in the river and 22 ashore, and two abutments. The granite-faced concrete block bases of the river piers will rest on steel H-piles driven to bedrock. Piers will range up to 195 ft. in height.

General Chemical Division, Allied Chemical & Dye Corp., New York City, has announced that its new sulfuric acid plant at Baton Rouge, La., has gone "on stream". The new $2,500,000 facility is the seventh major expansion at the Baton Rouge works since 1945 and brings to 20 the number of sulfuric acid plants operated by General Chemical in the U. S. and Canada.

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Fig. 433
Pop Safety Valve



Fig. 658
Relief Valve

THE DIFFERENCE BETWEEN POP SAFETY AND RELIEF VALVES

Pop Safety Valves are used in conjunction with gases, including steam. They pop wide open when the set pressure is reached, stay open until pressure has dropped . . . then snap shut instantly. **Relief Valves** are used in conjunction with liquids. They start to open at the set pressure but require about 20% overpressure to open wide. As pressure drops, they start to close and shut tight when the set pressure has been reached.

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WRITE FOR CIRCULAR 502, which describes the complete Lunkenheimer Line of 21 different Pop Safety and Relief Valve Patterns, each available in a wide range of sizes and pressures. Ask your Lunkenheimer Distributor or write The Lunkenheimer Co., Box 360, Cincinnati 14, Ohio.

The Price of a Lunkenheimer Valve Gets Smaller and Smaller and Smaller with Every Passing Year of Dependable Service.

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There's a big difference *in floor absorbents*

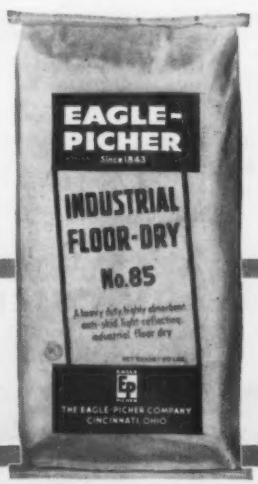


You, too, can witness the difference in floor absorbents! With his portable laboratory, your Eagle-Picher man will analyze your floor absorbent *right in your office*. You may actually conduct the test yourself! Without obligation, of course.

Here's what the test shows—

- The amount of oil and water absorbed for given bulk.
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- The benefits of your absorbent in terms of safety and reflective ability.

You'll see that Eagle-Picher Floor-Dry is insoluble, chemically inert and non-combustible . . . that it combines light weight for exceptional coverage with light color for brighter, safer working areas. Write today for the full story.



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EAGLE EP PICHER Since 1843

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For More Information Circle No. 268 on Inquiry Card—Page 17

Plans to construct the world's most modern instrument plant on a 129-acre tract near Philadelphia have been announced by **Leeds & Northrup Co.** Estimated cost of the 250,000 sq. ft. building, additional equipment, utilities, landscaping, parking lot, etc., is in excess of $4,000,000. Present schedules call for construction to start in early fall with occupancy in the latter part of 1955. The building will provide facilities for the manufacture of Micromax and Speedomax recorders and controllers, panels and cubicles for load frequency control, as well as space for supporting units engaged in engineering, industrial engineering, order control, inspection, receiving, warehousing and shipping.

The entire reciprocating power pump operation now handled at the Harrison, N. J., works of the **Worthington Corp.**, has been moved to the firm's Oil City, Pa., plant. Reciprocating steam pumps will continue to be manufactured at Harrison.

A new office, warehouse and manufacturing facility has been opened in Los Angeles, Calif., by **American Chain & Cable Co., Inc., Bridgeport, Conn.** The 12,000 sq. ft. building includes a unit for the manufacturing of various cables, brakes and controls for the automotive and aircraft industries as well as storage space for stocks of wire rope, wire rope slings and welding rods.

A big 144 in. mill has begun rolling tapered aluminum sheet and plate up to 10 ft. wide for the wing skins of the nation's latest military aircraft. The new mill represents a joint effort by the **Aluminum Co. of America, Pittsburgh,** and the U. S. Air Force to provide desired wing surface material for such aircraft as the giant Boeing B-52 and B-47 jet bombers. The new works, located at Davenport, Ia., encloses 52,000 sq. ft. in two buildings to house the operations.

Completion of an expansion program which will increase by nearly 40% the productive capacity for stainless steel tubing products has been announced by the **Tubular Products Division of Babcock & Wilcox Co., Beaver Falls, Pa.** A highly important part of the program is equipment for the hot extrusion of tubing. Principal advantage of this method, known as the Ugine-Sejournet process, is that metals such as molybdenum and certain stainless steels which are difficult or impossible to pierce by conventional methods, can be made into tubes by extrusion in less than five seconds.

American Brake Shoe Co., New York City, has signed an agreement to purchase the assets of the **Metallic Friction Materials Co., Cleveland.** The plant will be operated with present personnel as part of the Sintermet Division of American Brake Shoe.

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For More Information Circle No. 269 on Inquiry Card—Page 17

Pressed Steel Car Co., New York City, has completely closed its **Mt. Vernon, Ill., freight car building plant.**

Packard Motor Car Co., Detroit, is now building its own bodies in the Briggs-Conner plant. The Packard facility was acquired by Chrysler Corp. last December and is being leased to Packard for five years with an option to purchase the plant.

Phillips Mine & Mill Supply Co., Pittsburgh, has changed its name to the Phillips Corporation. The company has also moved into a new, modern, one-story plant of 60,000 sq. ft. in Rosslyn Farms, a suburb of Pittsburgh.

Neilson Chemical Co., Detroit, has opened its Eastern Warehouse at Allentown, Pa.

Pioneer Rubber Mills, Inc., Pittsburg, Calif., has been purchased by **H. K. Porter Co., Inc., Pittsburgh, Pa.** It will become part of the Quaker Rubber Corp., one of H. K. Porter Company's nine divisions. Pioneer Rubber Mills will retain its identity.

Stone & Webster Engineering Corp., Boston, has been selected to perform architect-engineering services associated with the design of the nuclear portion of the pressurized water reactor project to be constructed near Shippingport, Penna., according to the Atomic Energy Commission.

The Wellman Engineering Co., Cleveland, has acquired the locomotive crane division and plant of the Browning Crane & Shovel Co., also of Cleveland. The locomotive crane organization will be known as the Wellman-Browning Locomotive Crane Division of Wellman Engineering Company and will headquarter at 7000 Central Ave., Cleveland.

A new carbon dioxide plant will be built in Houston, Texas by **Liquid Carbonic Corp., Chicago.** Located on the ship channel, the new facility will greatly increase the company's production of carbon dioxide.

Cox and Stevens Aircraft Corp., Mineola, L. I., N. Y., has been acquired by **Neptune Meter Co., New York City.**

NEWS OF YOUR SUPPLIERS

Radio Receptor Co., Inc., New York City, has changed the name of its Seletron & Germanium Division to Semi-Conductor Division.

Rodney Hunt Machine Co., Orange, Mass., has announced the appointment of Charles H. Amidon as assistant manager of the Textile Machinery Division, and Henry E. Stanley, Jr., to the sales staff of the division.

The Electric Motor Division, A. O. Smith Corp., Milwaukee, has named Robert O. Dehlendorf assistant general sales manager with headquarters at the Dayton, Ohio, divisional office. In addition, Warren Hendricksen has been appointed to fill the newly-created post of general sales manager of the Process Equipment Division. He will headquarter in Milwaukee.

William C. Goeckel is the new sales manager of **Snyder Tool & Engineering Co., Detroit.**

Quentin S. Stump has been named national sales manager for the **Lord Chemical Corp., York, Pa.** He joined Lord in 1952 as a sales engineer.

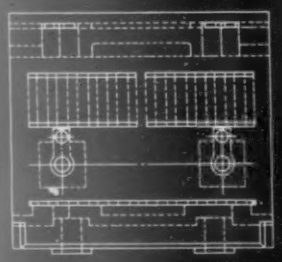
Samuel J. Clokey is now assistant vice president in charge of sales for **Jessop Steel Co., Washington, Pa.**

The formation of a new application engineering division within the company's engineering department is announced by **Morse Chain Co., Detroit.** The division will be headed by Ralph E. Cherry, former executive engineer of the Morse Detroit plant.

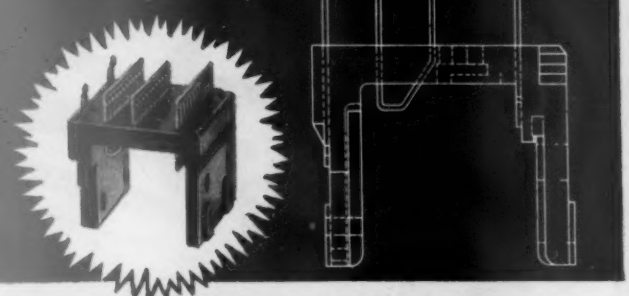
William A. McMahan is now western district sales manager for the **Carver Pump Co., Muscatine, Iowa.** He will cover Arizona, California, Oregon, Washington, Nevada, Utah, Idaho, Wyoming and Montana.

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ALL MATERIALS • ALL PROCESSES



Custom Molding



CONSOLIDATED MOLDED PRODUCTS CORPORATION

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For More Information Circle No. 270 on Inquiry Card—Page 17



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HERE'S real flexibility! Ampco-Weld offset ejector and universal ejector resistance-welding holders have interchangeable sockets for No. 1 and No. 2 Morse tapers. Tapers are quickly changed without changing holders. They last longer — no reaming necessary. They're leakproof. They're made from high conductivity Ampco alloys, which stay cooler in operation, and minimize deflection by greater strength.

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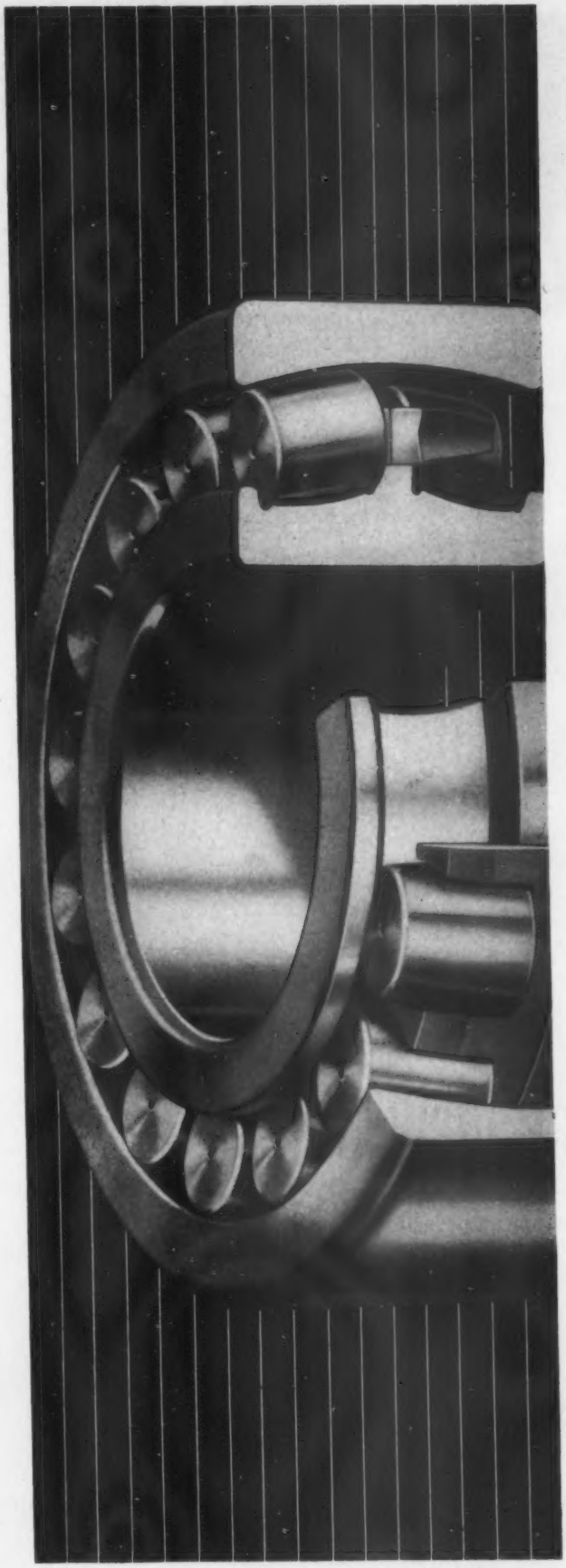
RW-14

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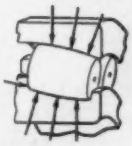
why it pays to specify

TORRINGTON

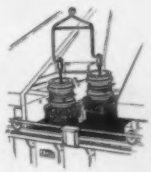
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Uniform, close control of precision-ground contact surfaces—for even load distribution and maximum bearing life.



Accurate geometrical conformity between races and rollers—for ultimate load carrying capacity and performance.



Races and rollers heat treated according to the most advanced metallurgical procedures—for maximum durability.



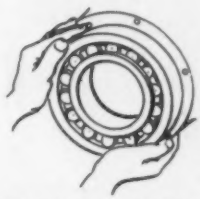
Individual one-piece cage for each path of rollers—assures freedom of operation.



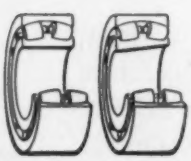
Integral flange on inner race—to give radial stability and positioning for thrust loads—both essential to satisfactory performance.



Self-aligning—for continuous, free-rolling service under shock loads and at sustained speeds.



Unit assembly—for easy, economical handling.



Available from stock with either straight or tapered bore—for shaft or adapter mounting.

These are advantages that give you long, efficient, low-maintenance service in the toughest heavy-duty application. **To get maximum value for your bearing dollar,** ***specify TORRINGTON Spherical Roller Bearings.***

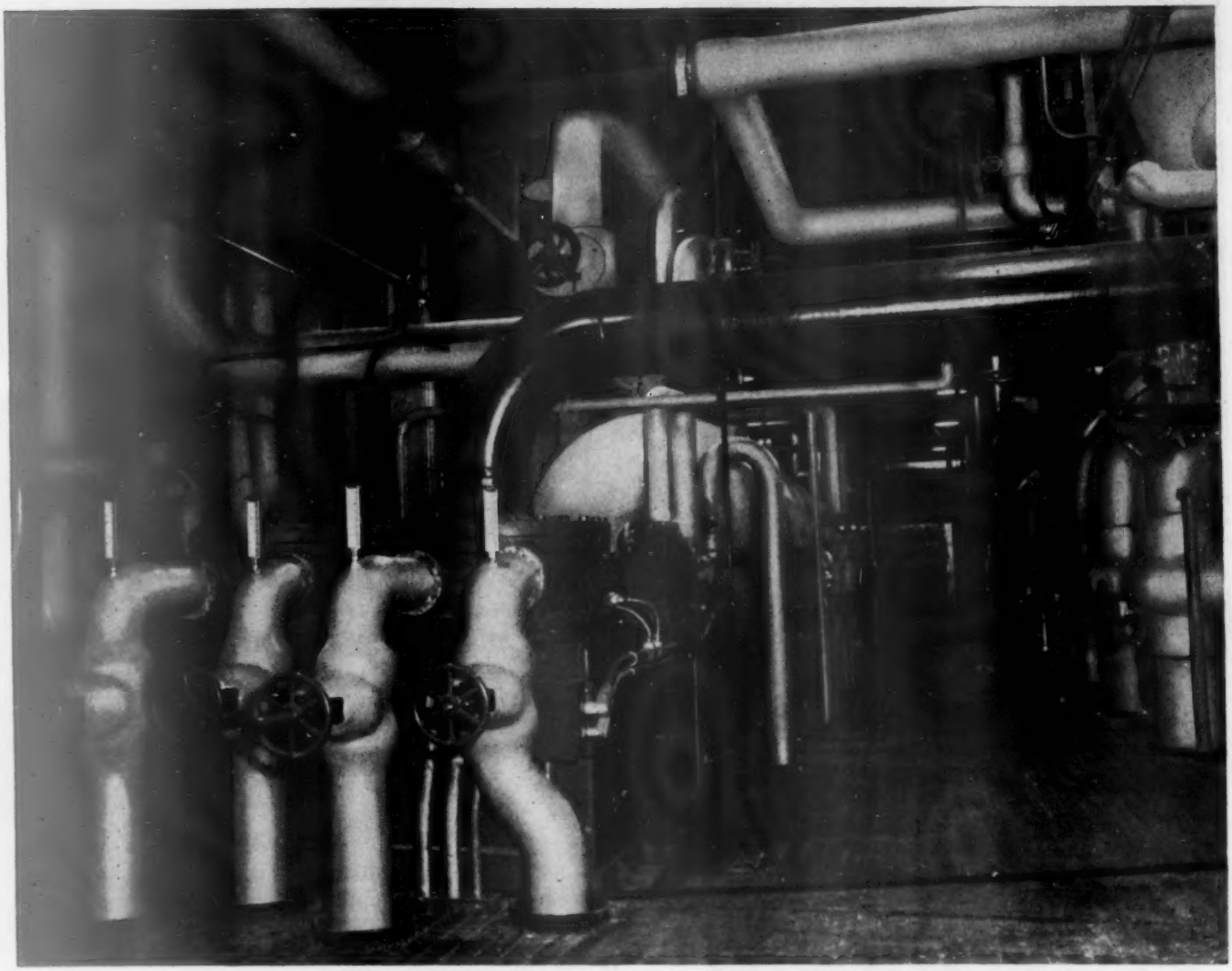
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TORRINGTON SPHERICAL ROLLER **BEARINGS**

Spherical Roller • Tapered Roller • Cylindrical Roller • Needle • Ball • Needle Rollers

For More Information Circle No. 272 on Inquiry Card—Page 17



Main steam line and feeder equipment of a large southern power station insulated with a combination of K&M Hy-Temp and "Featherweight" 85% Magnesia.

Dollar and heat loss minimized by power stations with

K&M HIGH TEMPERATURE INSULATIONS

For efficient, money-saving conservation of heat, keep in mind dependable K&M High Temperature Insulations. For example, by itself, "Featherweight" 85% Magnesia (85% basic carbonate of magnesia and asbestos fiber) effectively insulates piping and equipment with temperatures up to 600° F. Used with a primary layer of K&M Hy-Temp Insulation (diatomaceous silica), the combination is effective on applications up to 1900° F.

These K&M insulations last the life of the equipment they serve. They withstand moisture, vibration and frequent temperature changes.

New and now available is "Featherweight" Water-Resistant Magnesia Insulation for temperatures up to 450° F. It is for use where severe water exposure may damage the insulation or on indoor lines and equipment where high humidity and moisture is necessary.

Your K&M distributor is an experienced applicator who will gladly give you more information on these heat-saving, money-saving K&M insulations. Or write directly to us.

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Nature made asbestos . . . Keasbey & Mattison has made it serve mankind since 1873

K&M best in asbestos ®

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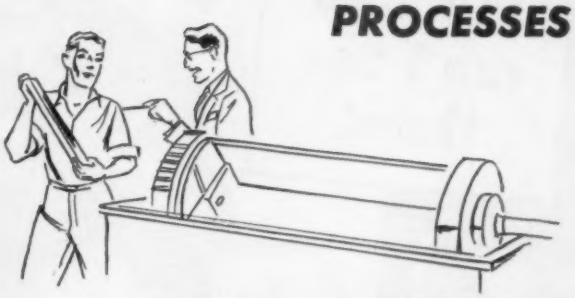
THE SEYMOUR LINE AT A GLANCE

NICKEL ANODES



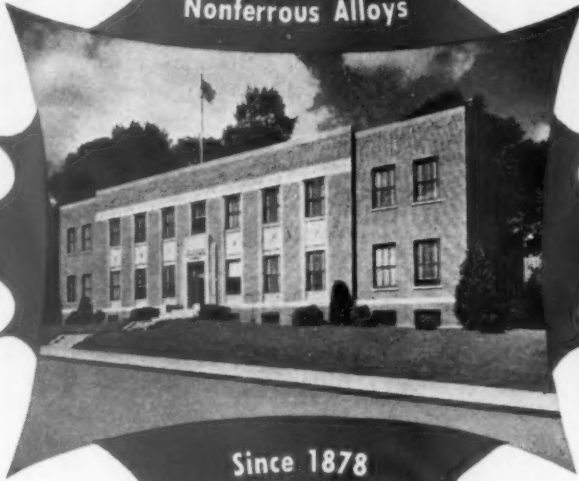
Uneven corrosion and release of foreign matter and excessive "sludge" militate against, often prevent, formation of an even, integrated plate of good color. Such "little foxes" are more or less traceable to imperfect grain structure in the anode. Seymour "Controlled Grain" Nickel Anodes have homogeneous grain. They are made of virgin nickel poured under accurate pyrometric control. As a result, Seymour Anodes corrode evenly, eliminate many headaches.

BRIGHT NICKEL PROCESSES



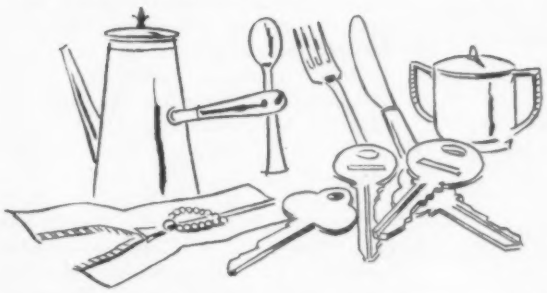
Available for warm or cold plating baths, Seymour Bright Nickel Processes accelerate work and improve results. Write for complete information.

Nonferrous Alloys



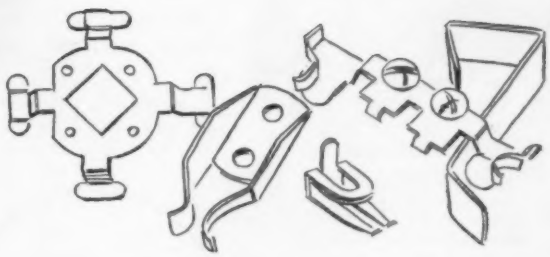
Since 1878

NICKEL SILVER



Seymour Nickel Silver is an ideal silvery white base for plated ware, a smooth-flowing alloy for spun and drawn articles. Free-cutting, non-corrodible, it is excellent for screw-machine products. It is widely used in the manufacture of keys, zippers, musical instruments, fine plated silverware, surgical instruments, fishing tackle, spectacle frames, etc.

PHOSPHOR BRONZE



The qualities of Seymour Phosphor Bronze—toughness, resiliency, and resistance to fatigue and corrosion—make this wonder metal ideal for a wide bracket of spring, electrical, and machined parts. Its range of grades and tempers gives the designer a selection of alloys to fit the job. Glad to furnish technical data and samples.

THE SEYMOUR MANUFACTURING COMPANY • SEYMOUR, CONNECTICUT, U.S.A.

THE COREY STEEL CO. • 2800 S. 61st COURT • CICERO 50, ILLINOIS

For More Information Circle No. 274 on Inquiry Card—Page 17



Synchro Control Transformer (¾ Size)

Geared Servo Motor (¾ Size)

Servo Motor Tachometer Generator (¾ Size)

Kearfott now offers Servo Motors, Synchros, and Servo-Motor Generators able to operate continuously in temperatures up to 185 degrees C. They are the same size and weight, and have the same characteristics as standard Kearfott Motors, and may be operated with them interchangeably. Besides the use of a new high-temperature insulating material, the stainless steel bearings, laminations and housings enable them to resist corrosion accelerated by high temperature operation.

Complete technical information on these and other Kearfott Components is available in bulletin form. Write today.

KEARFOTT COMPONENTS INCLUDE:

Gyros, Servo Motors, Synchros, Miniaturized Servo and Magnetic Amplifiers, Tachometer Generators, Hermetic Rotary Seals, Aircraft Navigational Systems, and other high accuracy mechanical, electrical and electronic components.

Visit the Kearfott display at the Western Electronic Show and Convention, August 25-27 at the Pan-Pacific Auditorium, Los Angeles, Calif., and the first International Instrument Congress & Exposition, September 13-24, Philadelphia, Pa.

Kearfott SINCE 1917

KEARFOTT COMPANY, INC., LITTLE FALLS, N. J.

Sales and Engineering Offices: 1378 Main Avenue, Clifton, N. J.

Midwest Office: 188 W. Randolph Street, Chicago, Ill. South Central Office: 6115 Denton Drive, Dallas, Texas

West Coast Office: 253 N. Vinedo Avenue, Pasadena, Calif.

A GENERAL PRECISION EQUIPMENT CORPORATION SUBSIDIARY

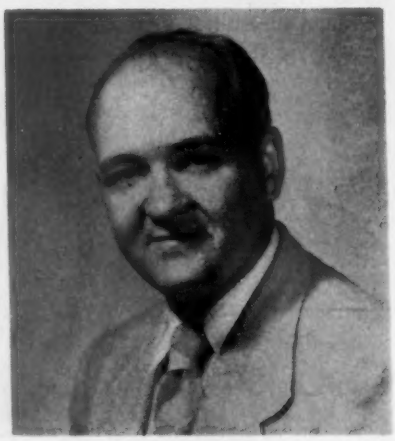
For More Information Circle No. 275 on Inquiry Card—Page 17

The Permutit Co., New York City, has announced that John S. Coppage has joined the sales department of its Chemical Service Division as manager of sales. He will be responsible for directing field salesmen and engineers in the application and sale of Chemical Division products and services.

Clarence Y. Robinson has been made manager of the Denver metal can plant of the **Continental Can Co., New York City.** James L. Tokich is now manager of the Oakland, Calif., plant.

Dr. Harry Walker has been appointed vice president of the **Norma-Hoffmann Bearings Corp., Stamford, Conn.,** in charge of the newly formed Walker Division.

Paul H. Taylor has been elected a director and vice president in charge



P. H. Taylor

of the Research and Hydra Spring divisions of the **Wales-Strippit Corp., N. Tonawanda, N. Y.**

To implement sales, installation and service of **Carrier Corporation, Syracuse, N. Y.,** air conditioning and refrigeration equipment in the intermountain west, the newly formed firm of Climate Engineering Co. has been named distributor for Utah, Idaho, northeastern Nevada, western Montana and western Wyoming.

Three department advancements have been announced by **Youngstown Sheet and Tube Co., Youngstown, Ohio.** John P. DeHetre, former manager of Oil Country Tubular sales, is now assistant general manager of sales. Charles T. McClure goes from assistant manager to manager of Oil Country Tubular sales and Robert E. Hawley is now manager of Line Pipe sales.

William C. Prettyman has joined the New York sales application engineering staff of the **Reliance Electric and Engineering Co., Cleveland.**

Sterling Electric Motors, Inc., Los Angeles, has named Joseph H. Fallon as Cincinnati district sales manager.



A "STOCK" REPORT

that's always profitable



Once more, Lamson offers a service to help you in purchasing bolts & nuts.

This Stock List is a monthly compilation of availabilities of the different types and styles of Phillips and slotted machine and tapping screws.

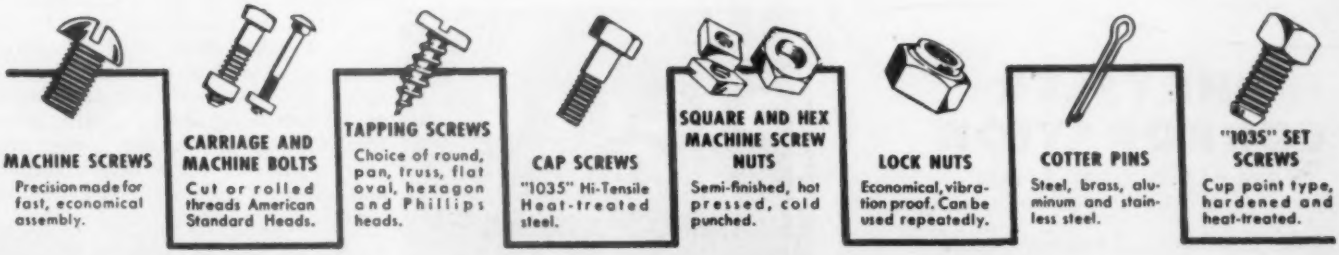
If your requirements fall within this group, you will find it profitable in terms of certain shipment, fast delivery, advantageous shipping costs and convenience, to request this "Stock Report" from Lamson & Sessions. With this method of complete stock listing we are, in fact, your warehouse inventory of fasteners at no cost to you.

***Regular Inventory— Not Surplus!**

This stock list, printed in an easy-to-file size, is yours AT NO COST. It will be sent each month simply by requesting it. Write today for your monthly "Stock Report".

Lamson & Sessions

The LAMSON & SESSIONS Co.
1971 West 85th St. • Cleveland 2, Ohio
Plants at Cleveland and Kent, Ohio • Birmingham • Chicago



MACHINE SCREWS — Precision made for fast, economical assembly.

CARRIAGE AND MACHINE BOLTS — Cut or rolled threads American Standard Heads.

TAPPING SCREWS — Choice of round, pan, truss, flat oval, hexagon and Phillips heads.

CAP SCREWS — "1035" Hi-Tensile Heat-treated steel.

SQUARE AND HEX MACHINE SCREW NUTS — Semi-finished, hot pressed, cold punched.

LOCK NUTS — Economical, vibration proof. Can be used repeatedly.

COTTER PINS — Steel, brass, aluminum and stainless steel.

"1035" SET SCREWS — Cup point type, hardened and heat-treated.

For More Information Circle No. 276 on Inquiry Card—Page 17



OILITE® Finished Machine PARTS

make your job EASIER... give you BIG SAVINGS too!

- Originators of Finished Machine Parts of Metal Powders
- Vast Research and Engineering Facilities
- Huge Production Facilities
- Each Part an Engineered Product
- COST is less, of course
- Fast Delivery... Normally 1 to 4 weeks
- Permits NEW Designs
- Large Parts, too—Over 20"
- ON-the-SPOT Service by Experienced Field Engineers

However you enjoy your leisure moments . . . fishing, gardening or just sittin' . . . it's more fun if your mind is free of "Shop" headaches. And that's why we're suggesting that *you* explore your designs for additional OILITE Finished Machine Parts applications.

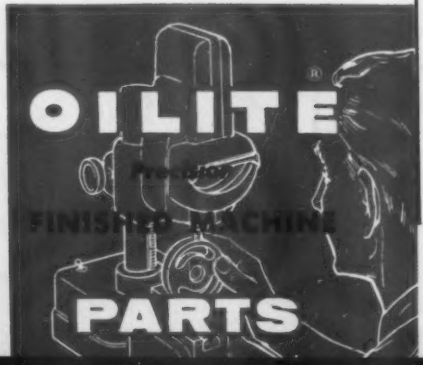
Each OILITE Part is an ***Engineered*** Product—Precision Made by artisans with more than 20 years Know-How. Field Engineers, too, give you ***ON-the-SPOT*** Service.

Only Amplex makes OILITE

CHRYSLER CORPORATION
AMPLEX DIVISION
Dept. B Detroit 31, Michigan

Field Engineers and Bearing Depots Throughout United States and Canada

OILITE Products include: Bearings, Finished Machine Parts, Cored and Solid Bars, Permanent Filters and Special Units of Non-Ferrous and Ferrous Metals and Alloys.



Fred M. Pugh has been named manager, midwestern sales district, for the **Silicone Products Department, General Electric Co., Pittsfield, Mass.** He will headquarter in Cleveland.

N. J. Connor is now manager of the New York district office of the **Babcock**



N. J. Connor

& Wilcox Co., New York City. He has been assistant manager of the office since 1946.

C. Lee Emerson is the new general sales manager for the **Kaiser Steel Corp., Oakland, Calif.** He was previously southern district sales manager with headquarters in Los Angeles.



B. Archambault

Bennett Archambault has been elected president and director of the **Stewart-Warner Corp., Chicago.**

Salem-Brosius, Inc., Pittsburgh, and its recently acquired subsidiary, the George J. Hagan Co., Pittsburgh, has appointed Alan D. Dauch as vice president of sales. John W. Holzwarth is manager of sales of heavy heating furnaces for the steel and non-ferrous metals producing and fabricating industries. Charles H. Schwerin is now manager of sales of rotary hearth furnaces and all heat treating furnace equipment.

For More Information Circle No. 277
←on Inquiry Card—Page 17

You can simplify purchasing . . . improve design . . . speed production

with improved C-D-F DILECTO® laminates

Only C-D-F, the Continental-Diamond Fibre Company, makes Dilecto laminated plastic, just as only Cadillac makes a Cadillac. Dilecto is 50 different materials with more combinations and variations in desired properties than we can tell you here.

But Dilecto has three important qualities that you should think about if you buy, design, or machine laminated plastics.

DILECTO HAS HIGH MECHANICAL STRENGTH

Mechanical strength is frequently an important determining factor in the selection of an insulating material. Insulating parts used in large electrical power equipment are frequently bulky. The high mechanical strength of Dilecto helps reduce size-dimensions of insulating parts without danger of failure. Instruments, meters and small motors frequently require very small insulating parts which must withstand comparatively large mechanical stresses. Insulation for use in high frequency circuits should have a minimum bulk factor for minimum dielectric losses. Dilecto fulfills these requirements with a combination of high mechanical strength and low loss factor, characteristic of the better C-D-F electrical grades.

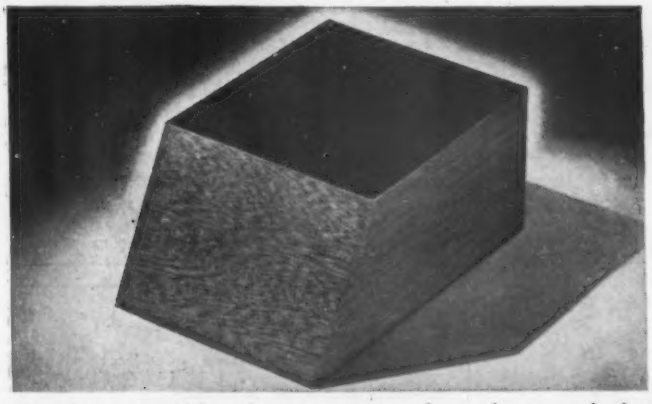
So C-D-F selects for your Dilecto insulation grade the correct, highest quality base material, paper, cotton, nylon, glass. These are used in combination with improved penetrating resins: Improved Phenolic, New Melamine, New Silicone, New Teflon, all synthetic, well polymerized resins.

Both the base and the resin are good insulators by themselves. But C-D-F sells them to you in an improved, practical form . . . Dilecto. Uniform sheets, tight tubes, strong rods, close tolerance machined and formed specialties, high bond strength metal clads.

Why does Dilecto combine so well mechanical strength with dielectric strength and dimensional stability? Because Dilecto is almost homogeneous, a true blend of resin and base.

DILECTO IS ALMOST HOMOGENEOUS

A poor laminate absorbs moisture at its edges, loses its insulating properties fast. Entrapped moisture and other volatiles within the cured structure causes inconsistent dielectric strength, with ultimate puncture and breakdown.



Punch press and bench saw operators know how much time and material is saved when the laminated plastic is *uniform* and *homogeneous* in nature like Dilecto.

DILECTO IS IMPROVED

Yes, C-D-F Dilecto is an improved laminated plastic, due to high standards and advances in resin and manufacturing techniques. It is watched by skilled workers in our modern plants, checked against rigid standards . . . C-D-F standards . . . by our quality control people. It is easy to machine, and the C-D-F shops are doing a booming business in specialties.

Table I—Typical Improved Phenolic Laminates

Commercial designation[a]	Resin	Filler	Improved properties	Improvement due to:
MEC-5	Phenolic	Nylon fabric	Insulation resistance; moisture resistance	Filler
XXHV-2[b]	Phenolic	Paper	High dielectric strength parallel to laminations	Resin and manufacturing technique
CRD	Phenolic	Cotton mat	Better machining	Filler
XXXP-26[b]	Phenolic	Paper	Insulation resistance; moisture resistance	Resin and manufacturing technique
C-92	Xylenol[c]	Cotton fabric	Alkali resistance	Resin
CF	Modified phenolic	Cotton fabric	Postforming	Resin

[a] All grades are Continental-Diamond Fibre Company.
[b] Resins have improved penetrating properties and the manufacturing techniques use these properties to provide better impregnation of the filler. Since thorough impregnation eliminates entrapped moisture and air, greater moisture resistance and better dielectric properties are attained. Manufacturing techniques also provide suitable temperature control during the curing stage to assure uniform quality and optimum property values in the finished laminate.
[c] Xylenol is essentially a dimethyl phenol.

—from Electrical Manufacturing Article "Wider Design Opportunities with the NEW Phenolics", Part II.



The next time you think of laminated plastics, the name to remember is C-D-F Dilecto. The improved, high strength, uniform material that makes insulation buying and using more a science, less a puzzle. New grades, new applications, new savings are just part of the Dilecto success story. Look up the facts in Sweet's Design File, or write for catalog. Send us your blueprint for quotation . . . tell us your design dream . . . C-D-F wants to work with you.

CDF *Continental-Diamond Fibre*

CONTINENTAL-DIAMOND FIBRE COMPANY
NEWARK 41, DELAWARE

For More Information Circle No. 278 on Inquiry Card—Page 17

The Associated Spring Company has announced that Harold B. Reid, sales manager of its Bristol, Conn., divisions is retiring after 35 years of service to the company. He will be succeeded by Jefferson S. Gamble. Mr. Reid, a graduate of Yale University in 1910, spent a brief period in the newspaper field before joining the purchasing department of Wallace Barnes Co. in 1919.



H. B. Reid

This company, plus Dunbar Brothers Co. and F. N. Manross & Sons Co. make up the Bristol divisions of Associated Spring. Shortly after promotion to purchasing agent, Mr. Reid also assumed the duties of advertising manager and was instrumental in launching the publication of the 27-year old magazine devoted to springmaking, "The Mainspring." In 1931 he was appointed sales manager of all the Bristol divisions, including the Wallace Barnes Steel Mill. He has also served as chairman of the sales committee of the Associated Spring Corporation, and as a director and vice president of the corporation. He also has been vice president of the Spring Manufacturers Association.





Photos by Whitney Studio

J. S. Gamble

J. T. Domingue

Jefferson S. Gamble, the newly appointed sales manager of Associated Spring Corporation's Bristol, Conn., divisions, has been with the organization since 1935. Originally joining the Wallace Barnes Company's spring and steel divisions, Mr. Gamble has been assistant sales manager of the Bristol divisions since 1950. He is succeeded as assistant sales manager by Joseph T. Domingue. Mr. Domingue, a member of Wallace Barnes Co. since 1929, was in the production, estimating and quality departments before being transferred to the sales department.

The Udylite Corp., Detroit, has appointed Jack H. Senger as a sales engineer in the Detroit area.

Henry & Wright, Division Emhart Mfg. Co., Hartford, Conn., has appointed Bryant Machinery and Engineering Company as midwest sales representatives.

Robert W. Peterman, formerly responsible for both product design and sales engineering, has been made sales manager of the Nopak Division of the **Galland-Henning Mfg. Co., Milwaukee.**

The Watts Co., Houston, Texas, has been named exclusive sales representative for southeastern Texas and southwest Louisiana by the **Conoflow Corp., Philadelphia.**

John F. Dreier, sales manager of the **Hart Mfg. Co., Hartford, Conn.,** for the past six years, has been elected vice president in charge of sales.

Robert F. Elmiger has been appointed sales promotion manager of the **Carpenter Steel Company's Alloy Tube Division, Union, N. J.**



R. F. Elmiger

Electric Steel Foundry Co., Portland, Ore., has named Jack R. Campbell as manager of its Stainless Cast Specialties Division.

Link-Belt Co., Chicago, has named Donald L. Shirley as district sales manager for the Seattle, Washington, area.

The Grigoleit Co., Decatur, Ill., has appointed A. P. McMinn to its sales staff. He will cover Illinois, Indiana and St. Louis County, Mo.

Two new representatives in California and another in Arizona have been appointed by **Lodding, Inc., Worcester, Mass.,** to handle their line of jig and fixture components. Named in California were the Western Tool and Supply Co., Oakland, and Precision Tool Sales, Los Angeles. In Arizona, the De Eugenio Tool Center, Phoenix, was selected.

REYNOLDS DISTRIBUTORS

ALABAMA
Arnold-Brown Metals & Supply Co., Birmingham
Southern States Iron Roofing Co., Birmingham
CALIFORNIA
Braico Metals, Inc., Los Angeles
Clingan & Fortier, Inc., Fresno, San Francisco and Vernon (Ingot also)
Turner Metal Supply Co., (Wire, Rod, Bar) Huntington Park
Union Hardware & Metal Co., Los Angeles
United States Steel Supply Div., Los Angeles
COLORADO
Salt Lake Hardware Co., Grand Junction
CONNECTICUT
American Steel & Alloys Corp., Hartford
DISTRICT OF COLUMBIA
Lyon, Conklin & Co., Inc., Washington
FLORIDA
Horne-Wilson, Inc., Jacksonville, Miami, Orlando and Tampa
Southern States Iron Roofing Co., Jacksonville, Miami, Orlando and Tampa
GEORGIA
Southern States Iron Roofing Co., Albany, Atlanta, Augusta and Savannah
IDAHO
Salt Lake Hardware Co., Boise
ILLINOIS
Aluminum Distributors Inc., Chicago
J. G. Braun Co., (Architectural only) Chicago
Sipi Metals Corp., (Ingot only) Chicago
United States Steel Supply Div., Chicago
Benjamin Wolff & Co., Chicago
INDIANA
Kasle Steel Corporation, Elkhart
KENTUCKY
Southern States Iron Roofing Co., Louisville
LOUISIANA
Southern States Iron Roofing Co., New Orleans
MARYLAND
Clendenin Bros., Inc., Baltimore
Lyon, Conklin & Co., Inc., Baltimore
MASSACHUSETTS
Bay State Refining Co., (Ingot only) Chicopee Falls
Arthur C. Harvey Company, Boston
MICHIGAN
Kasle Steel Corporation, Detroit and Grand Rapids
McDonnell Bros., Inc., (Architectural only) Detroit
Meier Brass & Copper Co., Detroit
Milton A. Meier Co., (Ingot only) Detroit and Grand Rapids
MINNESOTA
MacArthur Co., (Architectural only) St. Paul
United States Steel Supply Div., St. Paul
Vincent Brass & Copper Co., Minneapolis
MISSOURI
American Alloys Corp., (Ingot only) Kansas City
Industrial Metals, Inc., Kansas City and St. Louis
NEW JERSEY
Barth Smelting Corp., (Ingot only) Newark
Edgcomb Steel Corporation, Hillside
Mapes & Sprowl Steel Co., Union
NEW YORK
Barth Smelting Corp., (Ingot only) Newark, N. J.
J. G. Braun Co., (Architectural only) New York
Edgcomb Steel Corporation, Hillside, N. J.
Mapes & Sprowl Steel Co., Union, N. J.
Ontario Metal Supply, Inc., (Wire, Rod, Bar) Rochester
NORTH CAROLINA
Southern States Iron Roofing Co., Raleigh
OHIO
The Atlas Metal Co., (Ingot only) Cleveland
The G. A. Avril Company, (Ingot only) Cincinnati
Bridgeport Brass Co., (Wire, Rod, Bar) Cleveland
Kasle Steel Corporation, Cleveland
Mutual Manufacturing & Supply Co., Cincinnati
Vorys Brothers, Inc., Columbus
OREGON
Woodbury & Company, Coos Bay, Eugene, Medford and Portland
PENNSYLVANIA
Athos Steel Service Co., Philadelphia
Lesco Corporation, Pittsburgh
McDermott Metals Co., Inc., (Architectural only) Philadelphia
Merchant & Evans Co., Philadelphia
Pennsylvania Industrial Supplies Co., Inc., (Wire, Rod, Bar) Pittsburgh
Potts-Farrington Company, Philadelphia
Nathan Trotter & Co., Inc., (Ingot only) Philadelphia
SOUTH CAROLINA
Southern States Iron Roofing Co., Columbia
TENNESSEE
Southern States Iron Roofing Co., Memphis and Nashville
TEXAS
Moncrief-Lenoir Mfg. Co., Dallas, Harlingen, Houston, Lubbock, San Antonio and Temple
Vinson Supply Co., Dallas, Odessa and Snyder
UTAH
Salt Lake Hardware Co., Salt Lake City
VIRGINIA
Southern States Iron Roofing Co., Richmond
WASHINGTON
Clingan & Fortier, Inc., Seattle
WISCONSIN
Benjamin Wolff & Co., Milwaukee

Look Under "Aluminum" in Your Classified Telephone Directory

Rely on Your Nearby Reynolds Aluminum Distributor

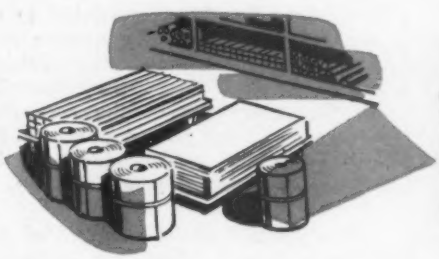
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Prompt Service and Delivery



Eliminate your inventory headaches. Our local stocks will help you keep your production on schedule. You get fast delivery on both "rush" orders and regular shipments . . . eliminating costly delays waiting for mill shipments. Let us show you how our warehouse services can solve some of your problems, and, at the same time, save you money.

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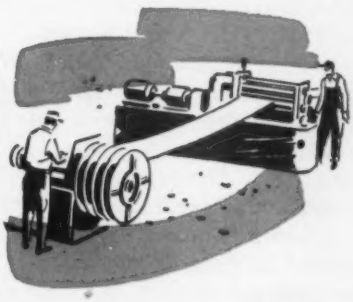
CONVENIENT WAREHOUSE STOCKS

We can help you eliminate capital tie-up in obsolete or idle inventory through our convenient warehouse stocks . . . you can cut your stock record keeping, accounting cost and warehouse overhead.



YOUR PARTNER IN PRODUCTION

Whenever we can, we will help on your production problems. Reynolds technical service men in the field and the fully integrated staff at Reynolds home office work hand in hand with us.



EXTRA EQUIPMENT THAT LOWERS COSTS

Slitting, cutting, shearing, sawing and other specialized operations are money-saving services we offer. Put our equipment and services to work for you to help lower your costs.

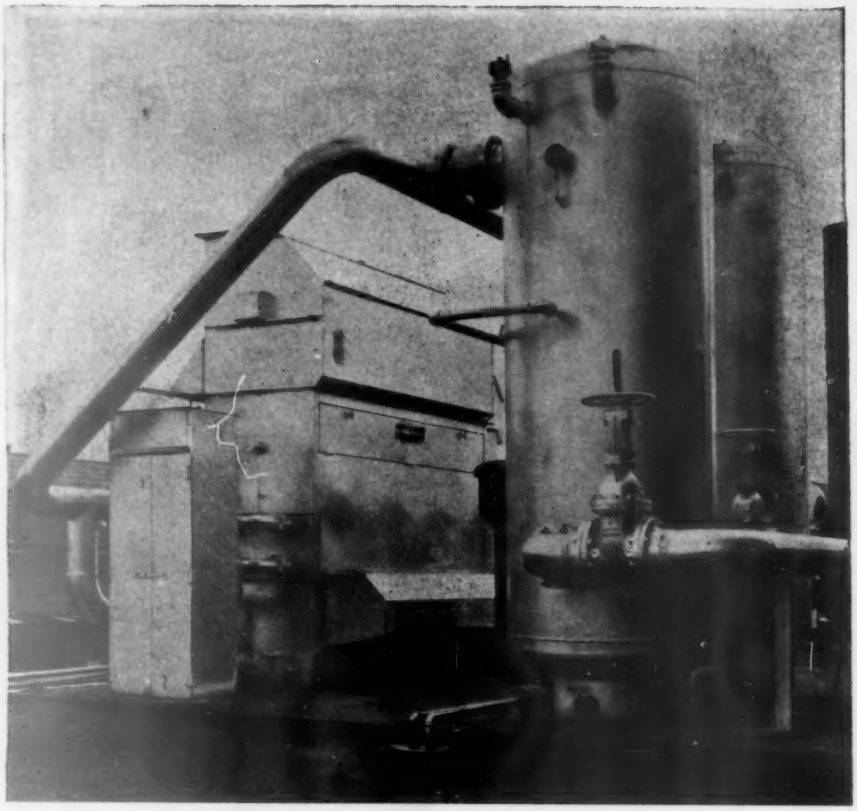


Call us today for Reynolds Aluminum Distributor Service. *We're as near as your phone.*

REYNOLDS ALUMINUM

MODERN DESIGN HAS ALUMINUM IN MIND

For More Information Circle No. 279 on Inquiry Card—Page 17



HOW YOU SAVE,
Getting Drier Compressed Air

● Direct saving in the cost of cooling water saves the price of the Niagara Aero After Cooler (for compressed air or gas) in less than two years.

Extra, for no cost, the drier air gives you a better operation and lower costs in the use of all air-operated tools and machines, paint spraying, sand blasting or moisture-free air cleaning. Water saving also means less expense for piping, pumping, water treatment and water disposal, or you get the use of water elsewhere in your plant where it may be badly needed.

Niagara Aero After Cooler assures all these benefits because it cools compressed air or gas below the temperature of the surrounding atmosphere; there can be no further condensation in your air lines. It condenses the moisture by passing the air thru a coil on the surface of which water is evaporated, transferring the heat to the atmosphere. It is installed outdoors, protected from freezing in winter by the Niagara Balanced Wet Bulb Control.

Write for complete information; ask for Bulletin No. 98

NIAGARA BLOWER COMPANY

Dept. PU 405 Lexington Ave. New York 17, N. Y.

Niagara District Engineers in Principal Cities of U. S. and Canada

INDUSTRIAL COOLING HEATING • DRYING

NIAGARA

HUMIDIFYING • AIR ENGINEERING EQUIPMENT

For More Information Circle No. 280 on Inquiry Card—Page 17

The appointment of **N. C. Gianakos** as assistant general sales manager has been announced by **Virginia Metal Products, Inc., Orange, Va.**, a subsidiary of Chesapeake Industries, Inc.

The **Joe Lowe Corp., New York City,** has opened an Institutional Department of baking mixes. With over 50 years of service to the baking industry, the company serves many of the industry's leaders with their line of prepared mixes. Jack Marcus has been appointed special representative to institutional users.

Three new appointments have been announced by the **Atkins Saw Division, Borg-Warner Corp., Indianapolis.** B. L. Owens has been advanced to sales manager of the division. He has been with Atkins for 32 years and was formerly director of marketing. M. A. Bauer, former manager of the Contract Department, is now assistant sales manager. M. A. Straub, who recently joined Atkins, is assistant sales manager in charge of advertising and sales promotion.



B. L. Owens



M. A. Bauer

Chester J. Noonan, vice president of the **United States Rubber Co., New York City,** has been appointed to the newly created post of executive general manager of two operating divisions of the company. He will be responsible for the operations of the company's second and third largest divisions, the footwear and general products division and the mechanical goods division.

D. F. McCandlish, manager of the Chicago district office, Air Reduction Sales Co., a division of **Air Reduction Co., Inc., New York City,** has been appointed regional manager of the north central area.

O. H. Yoxsimer has been named manager of refrigeration engineering at the new **Westinghouse Electric Appliance Division** plant in Columbus, Ohio. He has been with Westinghouse since 1927.

A new division of the **Denison Engineering Co., Columbus, Ohio,** to be known as the Aircraft Products Division has been established. Edwin L. Shaw, a veteran of aircraft component development with Denison, has been appointed to head the division. Roland N. Crossley is director of sales and James Parr is chief engineer.

For More Information Circle No. 281 on Inquiry Card—Page 17→



CLE◇FORGE *High Speed* DRILLS

Give More Holes Per Grind

On every job – no matter how difficult it may be – you'll appreciate the *extra* quality in these famous drills. They produce better work faster, at lower cost. No other drill gives you such outstanding *performance* and *economy.*

THE **CLEVELAND** TWIST DRILL CO.

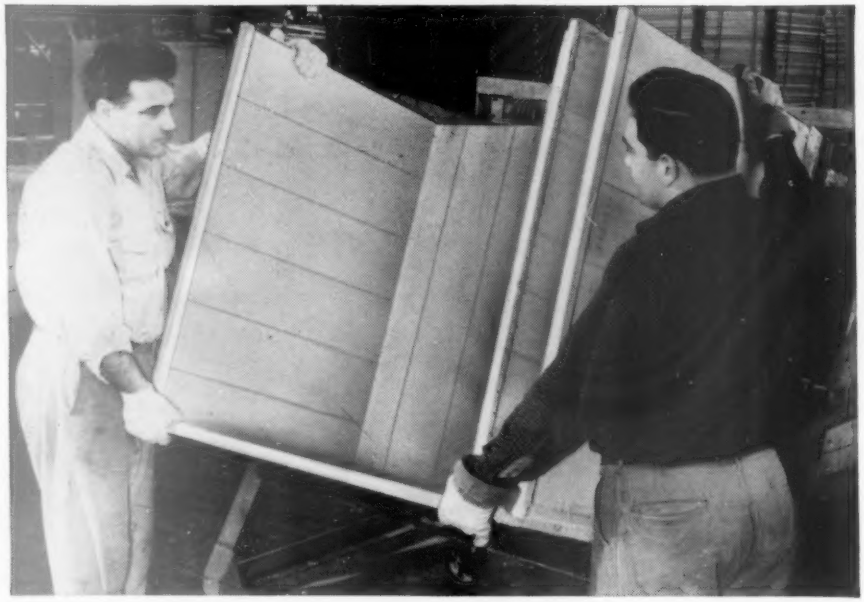
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Stockrooms: New York 7 • Detroit 2 • Chicago 6 • Dallas 2 • San Francisco 5 • Los Angeles 58

E. P. Barrus, Ltd., London W. 3, England

TELEPHONE YOUR INDUSTRIAL SUPPLY DISTRIBUTOR

SOLVED with one Generalift Pallet Box



FOUR separate handling and shipping problems

Here's what happened when Chase Brass and Copper Company of Waterbury, Connecticut, switched to Generalift Pallet Boxes:

SOLVED: A STORAGE PROBLEM
Generalift Pallet Boxes arrived knocked down, for easy storage—50 took no more storage space than 8 of the former containers.

SOLVED: A PACKING PROBLEM
Generalift Pallet Boxes assembled, packed and closed—in minutes.

SOLVED: A HANDLING PROBLEM
Generalift Pallet Boxes were made for easy fork-lift handling.

SOLVED: A SHIPPING PROBLEM
Generalift Pallet Boxes held more, cost less, and weighed less than the old style container—a 102-lb. Generalift Pallet Box carried 2100 lb. of pay load.

See how Generalift Pallet Boxes can help solve your handling and shipping problems—at a saving. Write for full details.

Engineered Containers for every shipping need

Factories: Cincinnati; Denville, N. J.; East St. Louis; Detroit; Kansas City; Louisville; Milwaukee; Prescott, Ark.; Sheboygan; Winchendon, Mass.; General Box Company of Mississippi, Meridian, Miss.; Continental Box Company, Inc., Houston.

General Box

GENERAL BOX COMPANY, 1843 MINER STREET, DES PLAINES, ILL.

★ ★ ★ ★ ★

For More Information Circle No. 282 on Inquiry Card—Page 17

De Laval Steam Turbine Co., Trenton, N. J., has announced the appointment of H. G. Bauer to the post of vice



H. G. Bauer

president and general sales manager. Previously, he was vice president in charge of engineering and manager of the Marine Division.

Two new sales engineers have been appointed for the Syracuse and Pittsburgh territories by the Standard Steel Works Division of **Baldwin-Lima-Hamilton Corp., Burnham, Pa.** Francis W. Klotz goes to Syracuse and Philip E. Pacini to Pittsburgh.

John J. Ryan has been made a sales representative for Monroe County, N. Y., for the Rochester plant of Follansbee Metals, a division of **Follansbee Steel Corp., Pittsburgh.**

Tommy J. McCuistion is now sales manager of the **Rubber Products Divi-**



T. J. McCuistion

sion of Parker Appliance Co., Cleveland.

Wyckoff Steel Co., Pittsburgh, has opened a new Detroit district office. Edward C. Koester has been appointed district manager.

The appointment of Harry E. Case as a sales engineer has been announced by the **Dravo Corp., Machinery Division, Pittsburgh.**

FOOL-PROOF PROTECTION

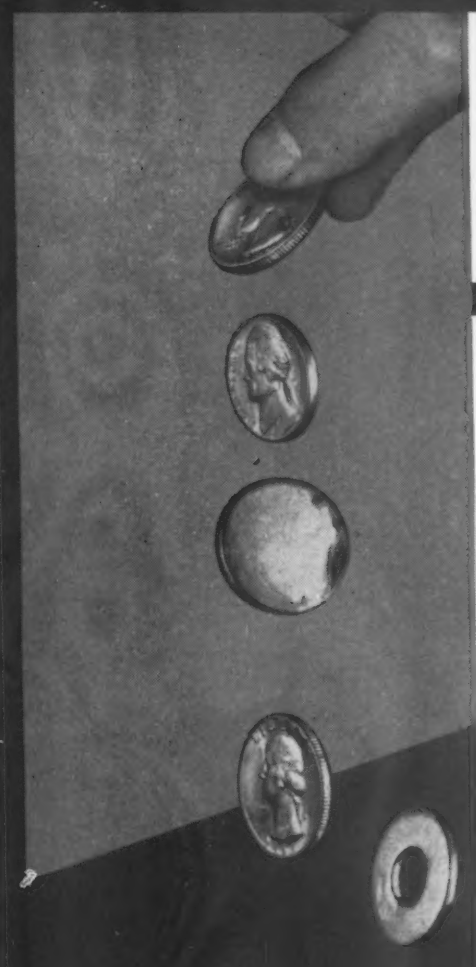
Udylite equipment plates precision parts of this intricate vending machine mechanism

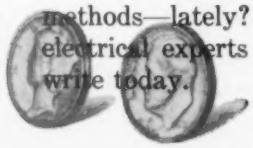
Every coin you drop in a vending machine is weighed, bounced, magnetized and sized . . . and if it is a slug or counterfeit it will be rejected.

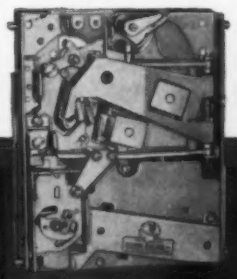
Such ingenious machines as manufactured by National Rejectors Company, St. Louis, Mo., require extremely close tolerances and uniformity for the 400 plus parts.

In Udylite Automatic Plating machine, Barrel Platers and Junior Automatics—as used by National Rejectors, you see volume plating at its finest. Millions of parts are turned out in mass-plated quantities for machines that must be fool-proof.

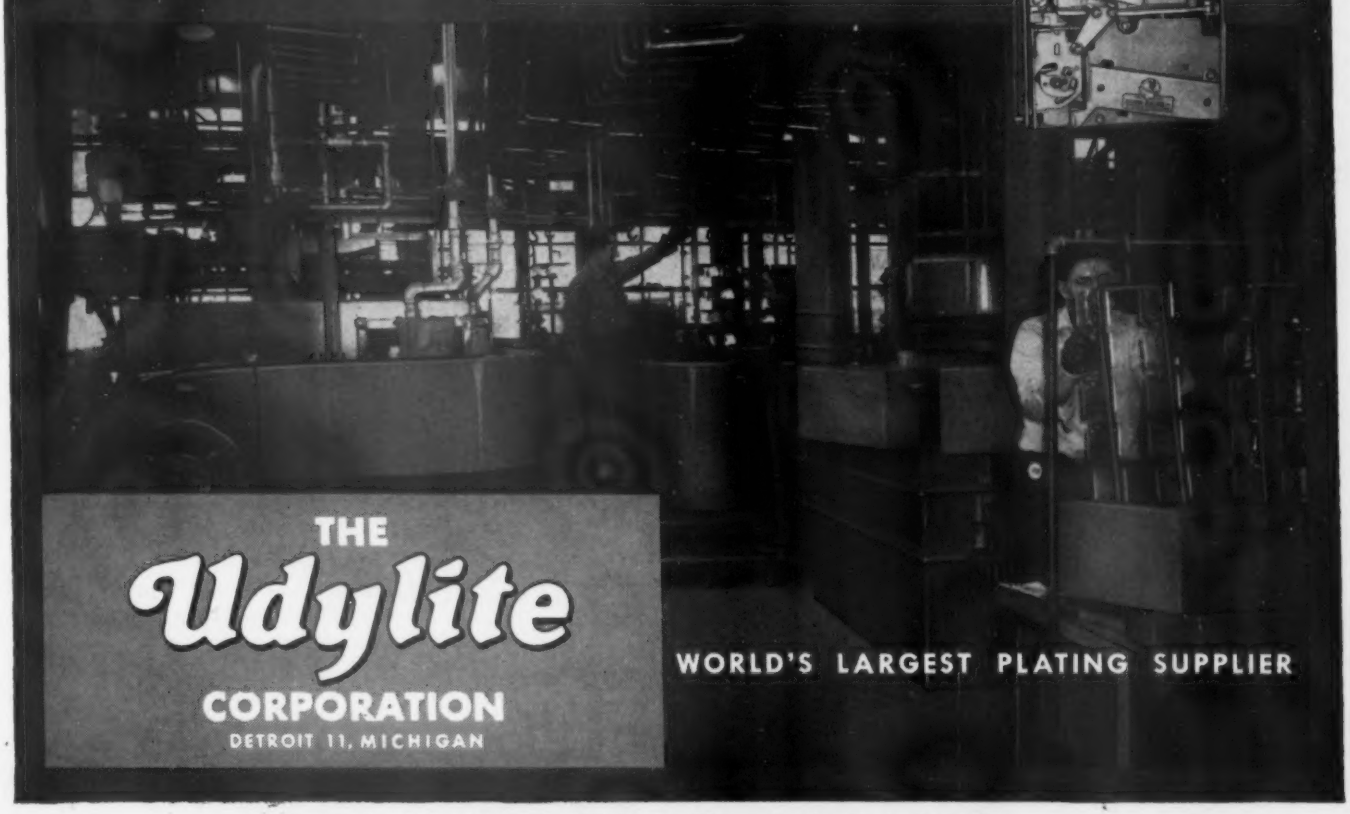
Use of Udylite equipment and supplies are cutting costs, reducing man-hours, and boosting output for hundreds of companies in American industry today. Have you taken a look at your costs—and your competition's methods—lately? Udylite's research, engineering or electrical experts are quickly at your service. Call or write today.







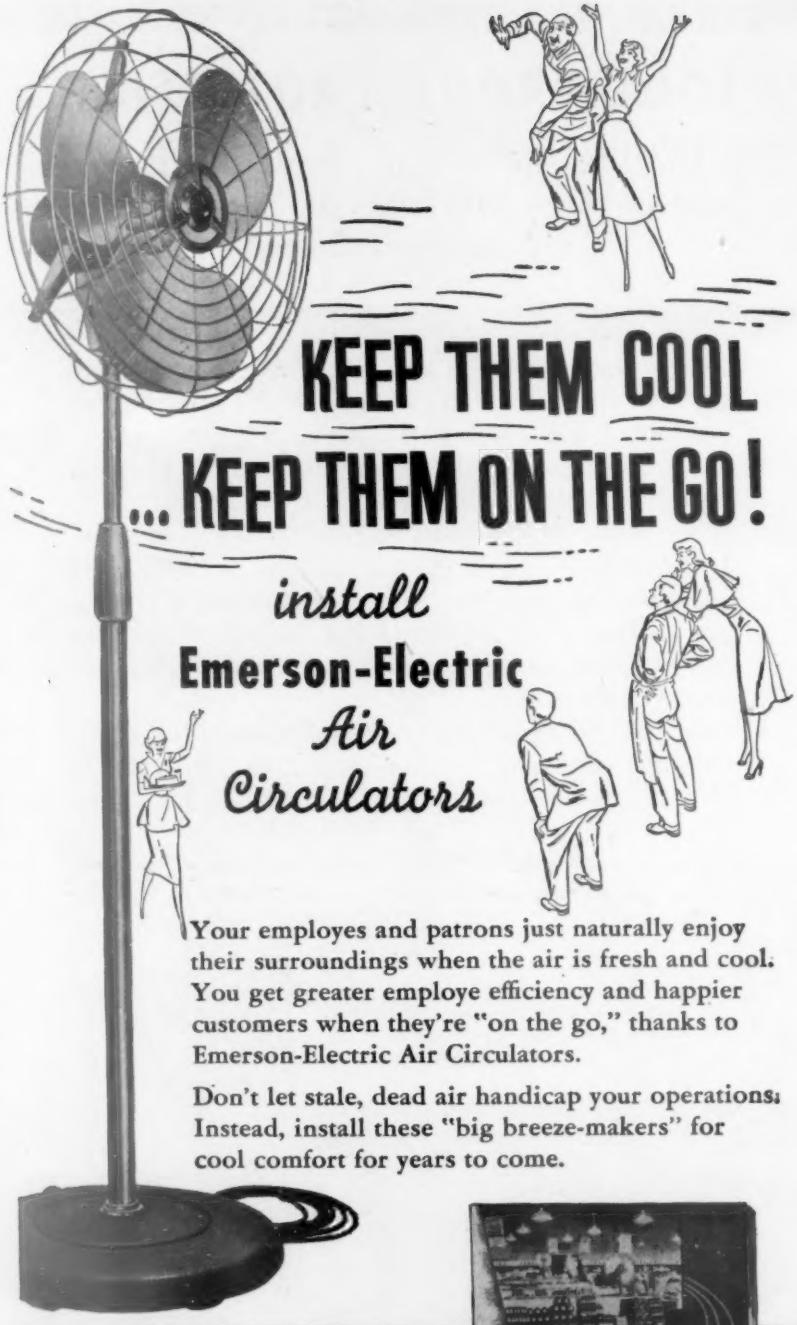
Filed down pennies, washers, lead, zinc, copper, brass and German-silver slugs are all rejected by this sensitive mechanism.



THE Udylite CORPORATION
DETROIT 11, MICHIGAN

WORLD'S LARGEST PLATING SUPPLIER

For More Information Circle No. 283 on Inquiry Card—Page 17



KEEP THEM COOL ... KEEP THEM ON THE GO!

install
Emerson-Electric
Air Circulators

Your employes and patrons just naturally enjoy their surroundings when the air is fresh and cool. You get greater employe efficiency and happier customers when they're "on the go," thanks to Emerson-Electric Air Circulators.

Don't let stale, dead air handicap your operations. Instead, install these "big breeze-makers" for cool comfort for years to come.



Here are the answers to ventilation problems

This bulletin gives complete data on these powerful fans, available in 24″ and 30″ blade sizes with two-speed, ball-bearing motors. 5-Year Factory-to-User Guarantee. Floor, counter, wall or ceiling mountings. Ask for Bulletin No. 789.

THE EMERSON ELECTRIC MFG. CO. • St. Louis 21, Missouri

EMERSON ELECTRIC
FANS • MOTORS APPLIANCES

For More Information Circle No. 284 on Inquiry Card—Page 17

Verne LaSalle Co., Cleveland, has been named by the Sealectric Division of **Williams Mfg. Co., Chicago,** as sales representative in Cleveland, northern Ohio and northwestern Pennsylvania.

Thomas M. Murphy has been appointed manager of industrial sales of the Alemite division of **Stewart-Warner Corp., Chicago.** He succeeds E. Ralph



T. M. Murphy

Harris, who has become distributor of Alemite lubrication products and Stewart-Warner instruments at St. Louis, Mo.

Edward Ireland has been transferred from the western New York territory to the central New York marketing area by Follansbee Metals, a division of **Follansbee Steel Corp., Pittsburgh.**

Raymond C. Jones has been named a district sales manager for **DeWalt, Inc., Lancaster, Pa.** He will cover Ar-



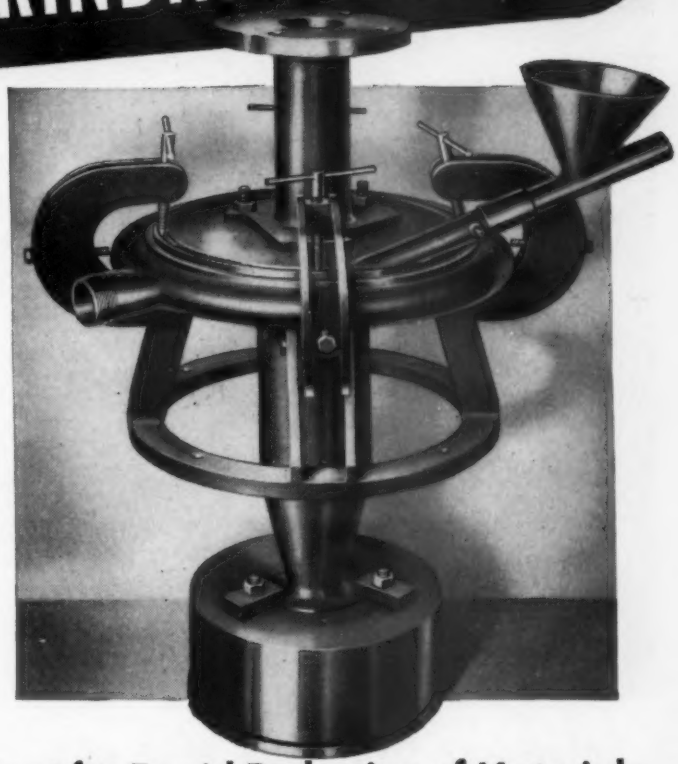
R. C. Jones

kansas, southern Illinois, southwestern Kentucky, northern Mississippi, southeastern Missouri and Tennessee.

W. C. Hale, Jr., has been elected executive vice president of the South Chester Tube Co., Chester, Pa., and its subsidiaries, South Chester Corp., Lester, Pa., and Chester Tidewater Terminal, Chester.

Sturtevant

MICRONIZER* GRINDING MACHINE



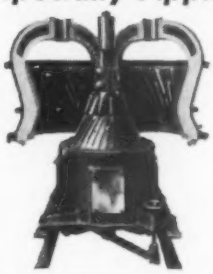
Reduces Solids to Micron Sizes

The new Sturtevant *Micronizer* grinding machine is a fluid jet grinder especially designed to reduce solid materials to particle sizes in the micron ranges.

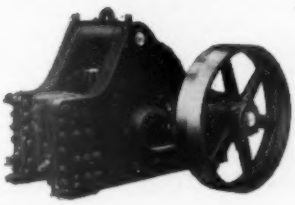
Sturtevant *Micronizers* are used for simultaneous dry grinding and classification of solids. The variety of materials that can be processed is large and includes both metallic and non-metallic minerals and ores, metals, pigments, insecticides, fungicides, pharmaceuticals, plastics, dyes and numerous other organic and inorganic products. Available in capacities from ½ to 3000 pounds per hour.

Other Sturtevant Pulverizing Equipment for Rapid Reduction of Materials...

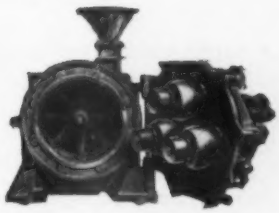
Especially Applicable for Initial Grinding of Products for the Micronizer Mill



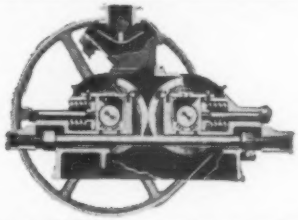
ROTARY FINE CRUSHERS for intermediate and fine reduction (down to ¼"). Open door accessibility. Soft or moderately hard materials. Efficient granulators. Excellent preliminary Crushers preceding Pulverizers.



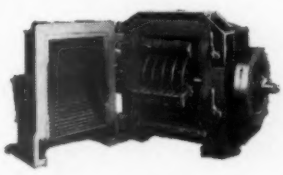
JAW CRUSHERS for coarse, intermediate and fine reduction of hard or soft substances. Heavy or light duty. Cam and Roller action. Special crushers for Ferro-alloys. Several types, many sizes.



RING-ROLL MILLS for medium and fine reduction (10 to 200 mesh), hard or soft materials. Very durable, small power. Operated in closed circuit with Screen or Air Separator. Open door accessibility. Many sizes. No scrapers, plows, pushers, or shields.



CRUSHING ROLLS for granulation, coarse or fine, hard or soft materials. Automatic adjustments. Crushing shocks balanced. For dry or wet reduction. Sizes 8 x 5 to 38 x 20. The standard for abrasives.



SWING-SLEDGE MILLS for coarse and medium reduction (down to 20 mesh). Open door accessibility. Soft, moderately hard, tough or fibrous substances. Built in several types and many sizes.



AIR SEPARATOR for separation of fines to 325 mesh and finer. Increases output from 25% to 300%... lowers power costs by 50%. Capacities ¼ to 50 tons per hour output.

*Registered trademark of the Sturtevant Mill Company

STURTEVANT MILL COMPANY

107 CLAYTON STREET, BOSTON 22, MASS.

DESIGNERS & MANUFACTURERS OF DENS AND EXCAVATORS • MIXERS • SCREENS • PULVERIZERS • ELEVATORS • AND COMPLETE FERTILIZER UNITS

For More Information Circle No. 285 on Inquiry Card—Page 17



Solve two problems with one solution...save time and money

The two problems are cleaning and rust protection. The single solution is Oakite Composition No. 98.

Imagine a water-emulsion detergent so effective that a mere 1 to 2% by volume solution will remove light soils and, *at the same time*, give stored metal parts adequate protection against rust for months on end.

Two-purpose Oakite Composition No. 98 will save you time and save you the cost of additional material and equipment. Oakite Composition No. 98 imparts an anti-rust film so fine that it will not hamper even the most delicate inspection operation. It dries quickly and evenly, and may be removed instantly.

Get more information on this and other Oakite compounds designed to make your all-around production operation more profitable. Write for Service Report B-2467 and that handy booklet "Some Good Things To Know About Metal Cleaning." Both are FREE. Address: Oakite Products, Inc, 54 Rector Street, New York 6, N. Y.

Technical Service Representatives in Principal Cities of U S & Canada

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS · METHODS · SERVICE

For More Information Circle No. 286 on Inquiry Card—Page 17

Flexonics Corp., Maywood, Ill., has appointed Col. Kenneth B. Boyd, former Air Force procurement officer for the B-47 Production Committee, as operational consultant for its Aircraft Division.

Sanson & Rowland, Inc., Philadelphia, has named Harry M. Grinnell as manager and sales manager of its Detroit office and warehouse.

Otto Krauss is now general manager



O. Krauss

of the St. Joseph, Mich., division of the **Whirlpool Corp.**

R. F. Allen has been elected a vice president of **H. K. Porter Co. Inc., Pittsburgh,** and will be in charge of its Buffalo Steel Division.

The Burroughs Corp., Electronic Instruments Division, Philadelphia, has appointed eight manufacturers' representatives for its line of multi-purpose pulse control units. The representatives are; Alfred Crossley & Associates, Chicago, for Minnesota, Wisconsin, Iowa, Illinois, Indiana, North Dakota, South Dakota, Nebraska and western Ohio; S. Sterling Co., Detroit, for Michigan and eastern Ohio; Land-C-Air Sales, Tuckahoe, for New York and northern New Jersey; Gerald B. Miller Co., Hollywood, for California, Oregon, Washington, Nevada, Arizona, New Mexico and western Montana; Earl Lipscomb Associates, Dallas, for Texas, Oklahoma, Arkansas, Mississippi and Louisiana; H. E. Ransford Co., Pittsburgh, for western Pennsylvania and West Virginia; Bivins and Caldwell, High Point, for North Carolina, South Carolina, Georgia, Alabama, Tennessee, Kentucky and Virginia; and Harris Hanson Co., St. Louis, for Missouri and Kansas.

The Synthetics Department of **Hercules Powder Co., Wilmington, Del.,** has appointed Clifton S. Skow a technical sales representative in New York.

The Cincinnati district office of **Bailey Meter Co., Cleveland.** has moved to 2330 Victory Pkwy.



Tube Application Adds New Beauty—Utility to New Car!

America's newest and most beautiful sports car—manufactured by the Nation's outstanding builder of fine cars—possesses new beauty and new utility because of a new application of Carpenter Stainless Tubing.

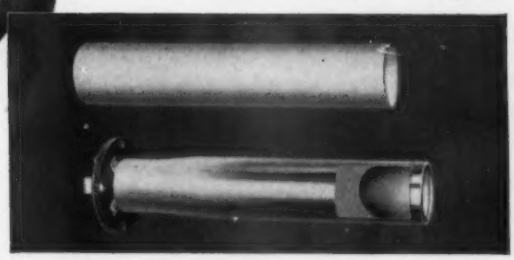
The twin tailpipes of this road-eating example of the automotive art are made from Carpenter Stainless. They resist the corrosive action of exhaust acids and corrosive atmospheres—stay bright—stay beautiful.

What's more, they are easy to fabricate. Although 10 separate steps are required to produce the finished part from the raw tube, swaging, rolling, cutting, spot welding and polishing are all accomplished without trouble.

Your fabrication, design or production problems may not be exact parallels to those outlined here . . . but whatever they are you may be sure that Carpenter Stainless Tubing *quality* can help solve them. For complete information consult your nearest Carpenter Distributor or write direct for your copy of the new Carpenter Condensed Data Bulletin.

The Carpenter Steel Company, Alloy Tube Division, Union, N.J.
Export Dept.: The Carpenter Steel Co., Port Washington, N.Y.—"CARSTEELCO"

Shown below are original tubing and a completed tailpipe assembly after ten fabricating and assembly operations.



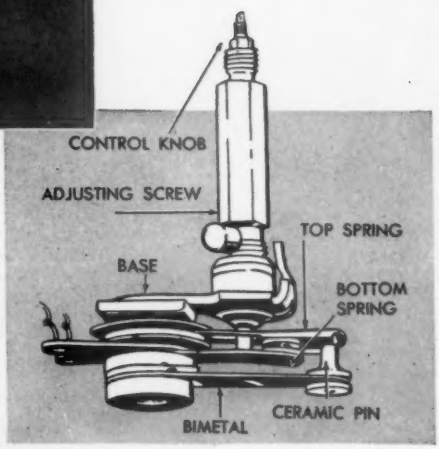
Carpenter
more than corrosion resistance
Stainless Tubing & Pipe

For More Information Circle No. 287 on Inquiry Card—Page 17

HOW CHACE THERMOSTATIC BIMETAL ACTUATES and CONTROLS THE Cook-N-Fryer



A Product of Westinghouse Appliance Division
Mansfield, Ohio



The new Cook-N-Fryer recently announced by Westinghouse, demonstrates another typical use of Chace Thermostatic Bimetal for actuating and controlling cooking appliances. The thermostat is the well-known Unitherm, variations of which are used in a number of Westinghouse Appliances.

The operating principle is reliable and time-proven. The control knob is mounted on the hexagonal shaft in a horizontal position. When the knob is set to the desired temperature, the thermostat top spring is a fixed distance from the bimetal pin. As the appliance heats, the bimetal element deflects upward until the ceramic pin engages the top spring and opens the circuit. Cooling then begins, the thermostat re-closes and once again the appliance begins to heat. It is this successive heating and cooling of the thermostat and the subsequent opening and closing of the appliance heating circuit that maintains the Westinghouse Cook-N-Fryer at the proper cooking temperature.

Manufacturers of heat responsive devices all over the country are specifying Chace Thermostatic Bimetal for control, indication and protection of costly equipment. We furnish our 29 types in strip, random length rolls or in completely fabricated elements or assemblies to your specification. Write today for your copy of "Successful Applications of Chace Thermostatic Bimetal", a handbook of engineering data. Or call on our application engineers before proceeding with your new design.

W. M. CHACE CO.
Thermostatic Bimetal
1635 BEARD AVE., DETROIT 9, MICH.

For More Information Circle No. 288 on Inquiry Card—Page 17

Several major executive changes have been announced by **Russell, Burdsall & Ward Bolt and Nut Co., Port Chester, N. Y.** William E. Ward, for several years vice president and general manager of RB&W, has been elected president and general manager. Evans Ward, president of the company since 1933, becomes chairman of the board and chief executive officer of the corporation. Samuel N. Comly, formerly vice president and treasurer, has been elected to the new position of executive vice president. Former Assistant Treasurer John B. Gates is now treasurer.

The newly created Aircraft Division of **Eaton Mfg. Co., Battle Creek, Mich.,**



J. C. Sprague



H. M. Reigner

has named J. C. Sprague as engineering manager and H. M. Reigner as sales manager.

Edmund L. Bataille has been made sales manager for the **Winslow Co., Inc., Newark.**

A reorganization of the marketing department of **Shell Chemical Corp., New York City,** has been announced. G. W. Huldrum, Jr., eastern division sales manager, is now general sales manager, supervising management of sales groups and chemical products managers. J. M. Selden, eastern division manager, was named assistant to the vice president. W. E. Keegan, assistant to the eastern division sales manager, is now sales manager and reports to Mr. Huldrum. Other appointments include; K. R. Fitzsimmons, eastern division resins and plastics supervisor, to industrial chemicals manager; J. J. O'Connell, Newark district manager, to solvents manager.

George B. Mackey has been made Pacific Coast regional manager for the **Lamp Division, Westinghouse Electric Corp., Pittsburgh.**

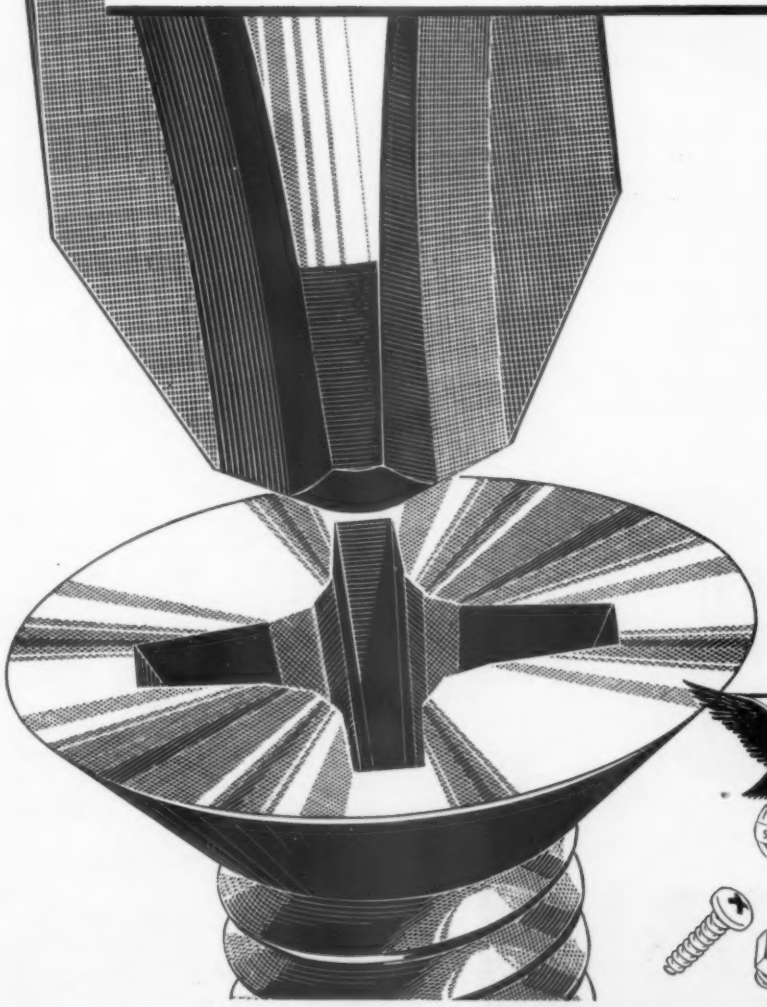
Take Advantage of this Special Service. Get More Information on Any Product.

Use The INQUIRY CARD Page 17



"Here's how AMERICAN cut our Fastener cost more than 50% with this STAINLESS SPECIAL"





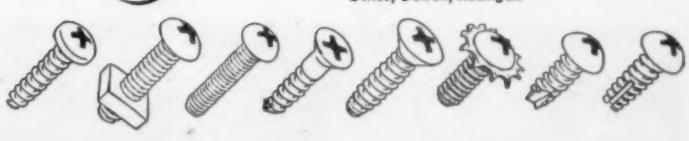
Here again American accepted a challenge, and came up with a stainless refrigerator stud *successfully cold-headed* . . . instead of milled from the bar, as before. And here again is proof that American know-how means substantial savings, even on fasteners made from costly material. *Savings here ran from 50% to 75%.*

So whatever your question in regard to fasteners, American has the right answer *cost-wise* . . . in standard Phillips cross-recessed-head products . . . or in specials like the one shown here . . . and in the metal best suited to the job. Now . . . what *is* your question? Write:

AMERICAN SCREW COMPANY

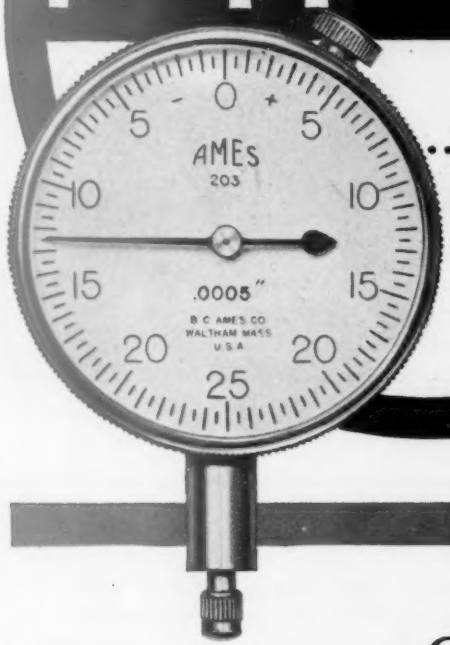
WEST MAIN & EAGLE STREETS, WILLIMANTIC, CONNECTICUT

Plants at Willimantic, Conn. and at Norristown, Pa.
Warehouse and office at Chicago
Office, Detroit, Michigan



For More Information Circle No. 289 on Inquiry Card—Page 17

AMES



...the preferred Dial Indicators

One of America's largest and most famous mass-producers recently chose Ames as preferred source of supply for indicator gauges.

The reasons behind this decision are the very reasons why *you* should standardize on Ames dial indicators and dial gauges:—the Ames "Hundred Series" indicators available in four sizes, fit every measuring requirement; they are *accurate, sensitive,* low in friction, yet are *rugged* and *tough*—give *more* on-the-job time. All Ames products embody latest design and highest-quality materials; they are manufactured by methods and machines that are *exclusive* with B. C. Ames Co.



Ames Dial Depth Gauge No. 11C

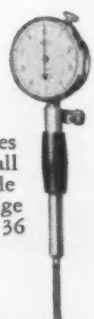


Ames Dial Micrometer No. 517

Ames Amplifying Dial Comparator No. 26



Ames Small Hole Gauge No. 36





Send today for your free copy of Catalog No. 58

Representatives in principal cities. B. C. AMES CO. *31 Ames Street Waltham 54, Mass.*

Mfgr. of Micrometer Dial Gauges • Micrometer Dial Indicators

For More Information Circle No. 290 on Inquiry Card—Page 17

WICO Electric Co. Forms New Contract Division

WICO Electric Company has recently announced the organization of a Contract Division to make available to industry its entire specialized engineering and production facilities for the manufacture of complex mechanical or electrical products.

WICO's geographic location in West Springfield, Massachusetts will enable manufacturers to utilize WICO's men and machines to furnish, under their own label, finished die castings, electrical and mechanical assemblies and components.



Leaders of WICO Electric's new Contract Division

Charles N. Sullivan has been appointed Contract Division sales manager to co-ordinate activities. Others in the supervisory group are Raymond E. Meynard, factory superintendent; Calvin G. Waters, manufacturing sales manager; Kendall C. White, production manager; Vincent F. Bagnall, manager-industrial engineering.

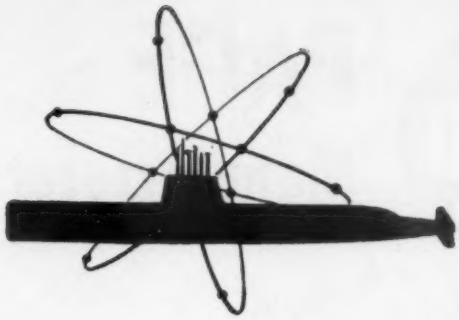
Air Express International Corp. in Domestic Airfreight Field

As part of a continuing drive to popularize and facilitate airfreight shipping, Air Express International Corp., is extending its service to domestic air shipping, according to Mr. Charles L. Gallo, president.

"In setting up the new domestic airfreight service, AEI will bring to bear many years of experience in airfreight expediting. It was the pioneer in airfreight forwarding, and over the years procedures have been developed specifically to expedite air cargo. Consequently, the advantages of shipping via AEI domestically will be the same as those presently enjoyed by international shippers," explained Mr. Gallo.

Domestic rates for this fast service will be lower than Air Express rates, thus providing express service at airfreight rates.

For the FIRST time
NUCLEAR POWER
is used for
PROPULSION





National Forge made many contributions to the "Nautilus." Among them were these two propulsion Shafts supplied to the Electric Boat Division of General Dynamics Corporation, builders of the Navy's new "Nautilus."

● The U. S. S. "Nautilus" is expected to outmode all existing transportation power methods. We're proud of our share in equipping her — and we're proud of our long association with the United States Navy.

Over the years the Navy has come to rely on National Forge facilities: the skill and abilities of the metallurgists, heat-treat experts, and skilled machinists to turn out forgings to their exact specifications.

When next you need forgings, why not have them
NATIONAL-FORGED?

STEEL MAKERS ☆ FORGESMITHS
HEAT TREATERS ☆ MACHINISTS

NF **National Forge**
AND ORDNANCE COMPANY
Irvine, Warren County, Pennsylvania

For More Information Circle No. 291 on Inquiry Card—Page 17

an ACCO product

PAGE
Manufacturers' Wire



PAGE makes them all

YOU draw the Shape...
PAGE will draw the Wire

Cross-sectional areas up to .250" square; widths up to ⅜"; width-to-thickness ratio not to exceed 6 to 1.

Tell us the way you want it. We'll follow your specifications.

Write or wire today

ACCO
Page Steel and Wire Division
AMERICAN CHAIN & CABLE

Monessen, Pa., Atlanta, Chicago, Denver, Detroit, Houston, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Bridgeport, Conn.

plus Welding Electrodes Wires Rods

For More Information Circle No. 292 on Inquiry Card—Page 17

1954 Volume of Relay Symposium Papers Ready

With a demand far exceeding the printing of papers from the First Oklahoma A&M Relay Symposium of June 1953, Potter & Brumfield has released a new volume of papers from the Second Relay Symposium held at Oklahoma A&M early this year.

Like its predecessor all papers are presented exactly as given at the Symposium — no attempt has been made to edit or arrange them in any specific sequence. The new volume is available without charge to engineering, manufacturing, purchasing, teaching and student personnel.

Write to Potter & Brumfield, Princeton, Indiana.

'Sleeve Box' for Fasteners

Continental Screw Company, New Bedford, Mass., has just introduced a new "sleeve box" for all types and sizes of its standard fastenings. The new container is available in 5 or 10 gross package units. It is exclusive in the fastener field and has been designed to provide closer inventory control, lower handling costs, easier product identification, stronger package construction and neater stock appearance. This improved package is available at no increase in cost.

New Booklet on Tin

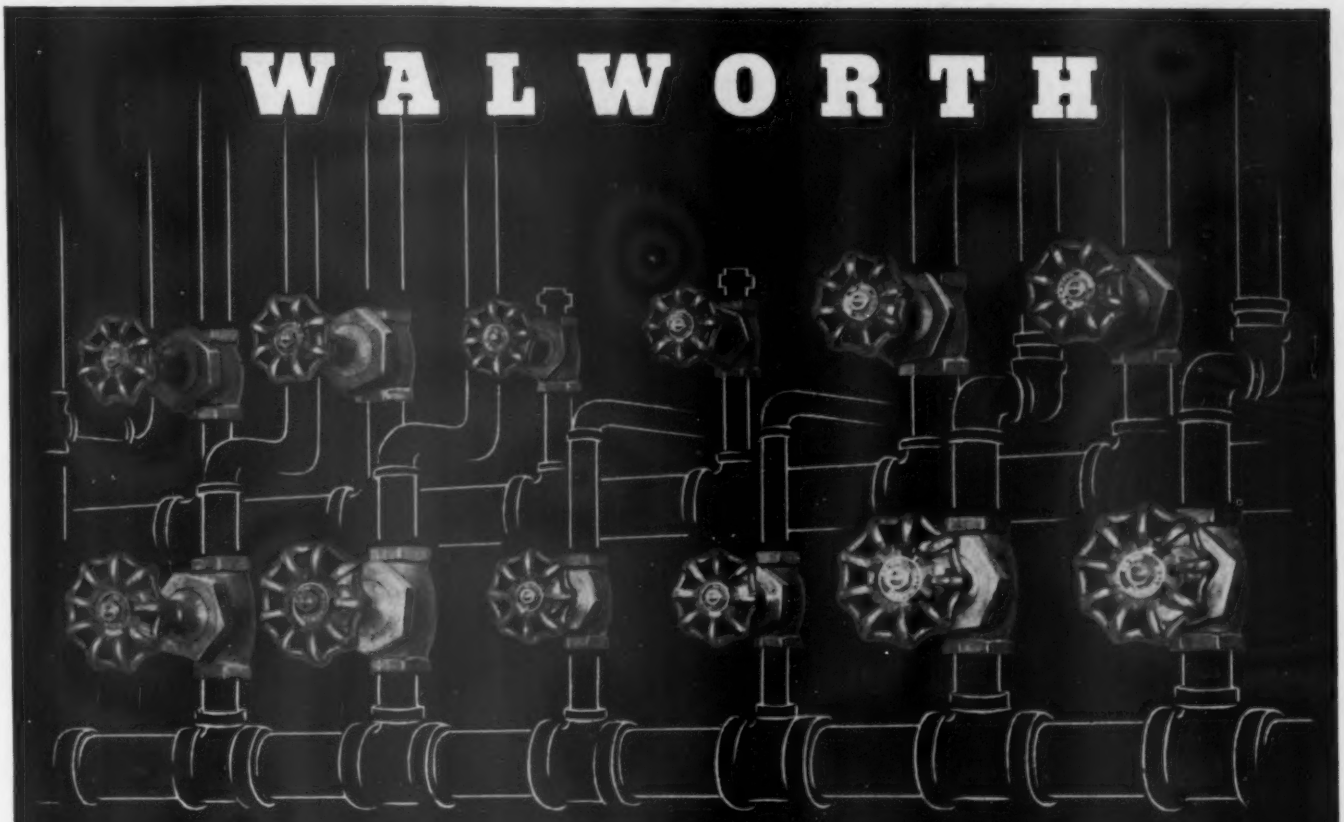
The story of Straits Tin, a pictured narrative of the metal's almost limitless uses in American industry and of operations in mining it in Red-guerrilla-plagued Malaya, is told in a new 20-page booklet.

The booklet, "Straits Tin," put out by The Malayan Tin Bureau, Washington, D.C., examines an impressive array of tin uses ranging from packaging Geiger counters and lubricating pistons to linking the world's communications and stabilizing plastics.

It points up the fact that research almost daily is opening up new areas in which tin plays a vital role in the improvement of products and production and experimental techniques and in the creation of new products.

The Malayan Tin Bureau, 1028 Connecticut Ave., N.W., Washington 6, D.C., will send copies of the booklet to industrial executives and technologists on request.

WALWORTH

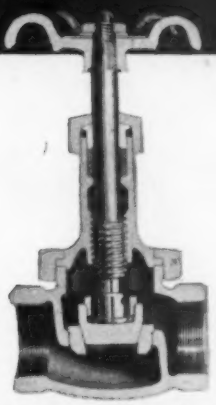


BRONZE VALVES

Better because ... **Walworth has standardized its line of bronze valves to provide an unsurpassed system of interchangeability of parts for assembly or replacement. You can maintain a great number of Walworth Bronze Valves with a small inventory of basic parts . . . you minimize part replacement problems. For further information, ask us for our Bronze Valve Standardization Chart.**

Choose from complete lines of Walworth Bronze Valves – including gate, globe, angle, check, and lubricated plug types. Walseal® Bronze Valves and Fittings are also available for making silver-brazed joints.

For full information on Walworth Bronze Valves and Fittings, call your Walworth Distributor, nearest Walworth Sales Office, or write to Walworth Company, General Offices, 60 East 42nd Street, New York 17, N. Y.



Parts are carefully machined and finished to close tolerances, thereby assuring accurate fit and alignment under all conditions. Sectioned valve is Walworth No. 225P Bronze Globe Valve with stainless steel plug-type seat and disc, heat-treated to a minimum of 500 Brinell hardness.

WALWORTH

Manufacturers since 1842

valves . . . pipe fittings . . . pipe wrenches

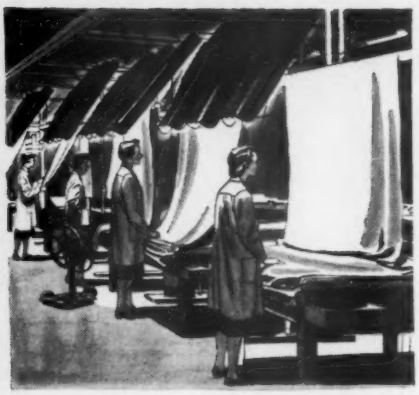
60 East 42nd Street, New York 17, N. Y.

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

For More Information Circle No. 293 on Inquiry Card—Page 17

HAS YOUR LIGHTING KEPT PACE WITH PROGRESS?





You're always ahead with Sylvania Fluorescent Lamps because of Minimum Heat



Sylvania lamps bring you maximum light with *minimum* heat. Place your hand on a lighted Sylvania Fluorescent Lamp and you will be amazed at the mild, low temperature of the brilliant tube.

In many stores, offices and factories where maintained temperatures are desirable, the coolness of Sylvania lamps becomes a factor of extreme importance.

Important, also, to *any* business, is the fact that Sylvania Fluorescent Lamps offer you written assurance of perfect satisfaction or your money back.*

LIGHT FOR FREEDOM · POWER FOR PROGRESS

* Try 24 Sylvania Fluorescent Lamps of any popular type. If, in your opinion they don't give more light and maintain color and brightness for a longer time than any other brand, send them back with your signed Certificate of Assurance and your money will be refunded.

SYLVANIA

Sylvania Electric Products Inc., 1740 Broadway, New York 19, N. Y.

In Canada: Sylvania Electric (Canada) Ltd., University Tower Bldg., St. Catherine St., Montreal, P. Q.

LIGHTING · RADIO · ELECTRONICS · TELEVISION

For More Information Circle No. 294 on Inquiry Card—Page 17

New Hardwood Lumber Grades Proposed by Military

New grade specifications for hardwood dunnage and vehicle stock are being developed for the Corps of Engineers at the resarch laboratory of Timber Engineering Company.

In addition, the specifications for three other lumber items are being reworked to attain their closer conformance to military requirements. Both new and revised grade specifications are being prepared in a manner appropriate for inclusion in the National Hardwood Lumber Association's official grading rules. The proposed grades will be submitted to the NHLA grading rules committee for consideration.

Bibliography on Filing for Engineering Libraries

A selected list of references for organizing files in engineering offices or libraries has been announced by Engineering Societies Library. The references are to articles in magazines, books, and pamphlets on filing, classification and indexing, lists of subject headings, and hand-sorted punched-card systems suitable for organizing small collections of engineering books, notes, correspondence, abstracts, reprints, drawings, maps, catalogs, etc. Some of the listed items are general — some related to specific subject fields.

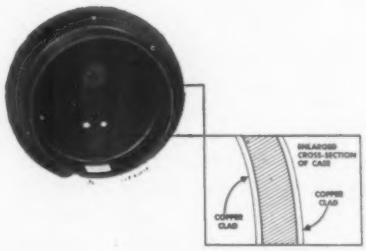
ESL Bibliography No. 9: "Bibliography on Filing, Classification, and Indexing Systems for Engineering Offices and Libraries". 79 annotated references. 18p. Mimeographed. 1954. $2.00. Available from the Engineering Societies Library, 29 West 39th Street, New York 18, N. Y.

Steel Sheet Weight Calculator

A new sheet weight calculator is being offered to sheet metal fabricators by Armco Steel Corporation. Weights can be determined for many types of special and commodity steel sheets, including coated and uncoated grades, as well as stainless steel sheets and plates and the commonly used non-ferrous metals. On the reverse side of the calculator is a gage, weight and thickness table for stainless steel and hot and cold rolled mild steel sheets, strip and plates. The calculator can be obtained by writing to Marketing Service Department, Armco Steel Corporation, Middletown, Ohio, for 50 cents.



You're looking at the biggest pressure gauge development since the "Recalibrator"



Another first for Marsh

Here is a case in keeping with the "Conoweld" tube. Another recent Marsh development, it is called the

New *Marshalloy* Case

It is a copper-clad wrought steel case of boiler plate thickness, four times as strong, and one-third lighter than conventional cast iron cases. Copper surface makes it as non-corrosive as a plastic or die-cast case. Handsome, corrosion-resistant, satin black enamel and Marsh safety blow-out plug are the finishing touches.

Here is one of those typically MARSH developments . . . the kind of pioneering step you have come to expect from the organization that originated the basic advances in pressure gauges culminating in the exclusive "Recalibrator." This latest Marsh development is known as the

NEW MARSH *"Conoweld"* TUBE

This time we have made the best part of the best Marsh gauge still better. We have gone into the part that actually does the work — the socket and tube — and have made it permanently leak-tight from inlet to tip of tube.

We have done this by fusing the tube into the socket and the tip to the tube so that the whole assembly is truly *one piece*. The photo of one of the sockets sawed in half shows the perfect fusion of the vital joint. Tests and photomicrographs prove the perfection of the fusion.

Developing the fusing process called for extensive research. The method as finally perfected — the "Conoweld" process — involves first fusing the tube to the socket and end-piece; then tempering the tube to required resiliency.

Yes, it is these dramatic departures from beaten paths that have achieved leadership for Marsh gauges and are ever increasing that leadership. Ask for latest information covering gauges for all services.

MARSH INSTRUMENT CO. *Sales affiliate of Jas. P. Marsh Corporation*
Dept. G. Skokie, Ill. *Export Dept., 350 Howard St., Skokie, Ill.*

MARSH GAUGES

"THE STANDARD OF ACCURACY"

MANUFACTURERS OF THERMOMETERS • WATER REGULATING VALVES • SOLENOID VALVES • HEATING SPECIALTIES

For More Information Circle No. 295 on Inquiry Card—Page 17

KUHN & JACOB

is proud to be the molder of this attractive housing for the . . .

Granco UHF CONVERTER



The "new look" acquired by this tried-tested-proven UHF Converter is largely due to the beautiful job of custom Bakelite molding done for Granco Products, Inc. of Long Island City by KUHN & JACOB MOLDING & TOOL COMPANY. The housing comes out of the 2-cavity die practically complete, with the exception of minor finishing operations.

Not only do we do the molding in such cases, but we make the molds as well. In fact we can place at your disposal complete facilities, from design to finished piece. Our operations are economical, too. Just write us a description of what you have in mind. We'll be glad to help you in any way we can.

KUHN & JACOB MOLDING & TOOL CO.

1204 SOUTHARD STREET, TRENTON 8, N. J.

CONTACT THE K & J REPRESENTATIVE NEAREST YOU

S. C. Ullman, 55 W. 42nd St., New York, N. Y.
Telephone—Penn. 6-0346
Wm. T. Wyler, Box 126, Stratford, Conn.
Telephone—Bridgeport 7-4293
Wm. A. Chalverus, Carson Road, Princeton, N. J.

For More Information Circle No. 296 on Inquiry Card—Page 17

U. S. Government Purchasing Directory

Publication of the U. S. Government Purchasing Directory, the first complete guide to military and civilian purchasing activities of the Federal Government, was announced by Wendell B. Barnes, administrator of the Small Business Administration.

The directory lists some 4,000 classes of commodities covering the more than 5,000,000 items purchased by both military and civilian agencies of the U. S. Government, and makes it easy for the businessman to learn who in the Federal Government, biggest buyer in the world, buys what, and where.

The 92-page directory is on sale by the Superintendent of Documents, Washington 25, D. C., for 50 cents. It is designed as a companion to SBA's U. S. Government Specifications Directory, now being revised, and which will be available shortly. In announcing the new Directory, Mr. Barnes said:

"With the publication of the directory there is now available to the small business proprietor for his immediate use, in his own place of business, a current and comprehensive guide to the agencies which buy his products or services, the addresses of their purchasing offices, and the necessary procedures for selling to them.

"More than that, to the alert businessman, the Directory may also prove a source of valuable ideas about additional products and services he can supply to the Government.

"When the companion publication is available, the businessman will have also a ready-reference guide to the locations near his own place of business where he can inspect specifications and standards for items purchased by both military and civilian agencies of the Federal Government.

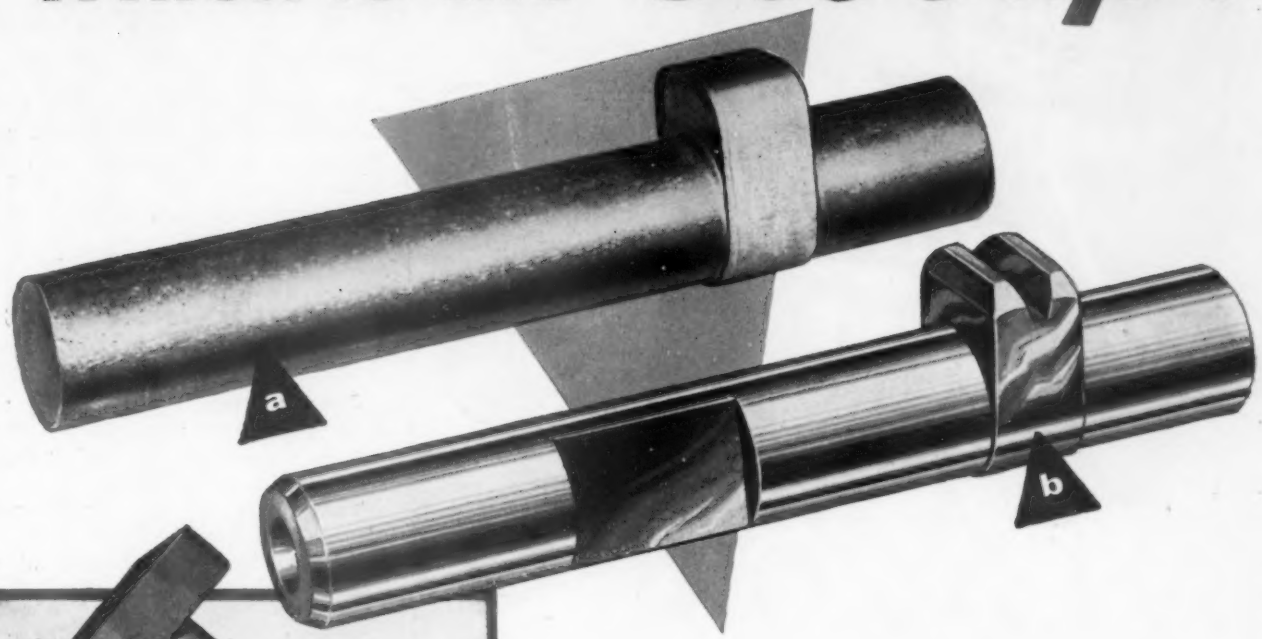
"These two volumes, when used in conjunction with the Consolidated Synopsis of Proposed Procurements and Contract Awards Information, published daily by the Department of Commerce, should provide a source of new business for many of the smaller manufacturers and suppliers."

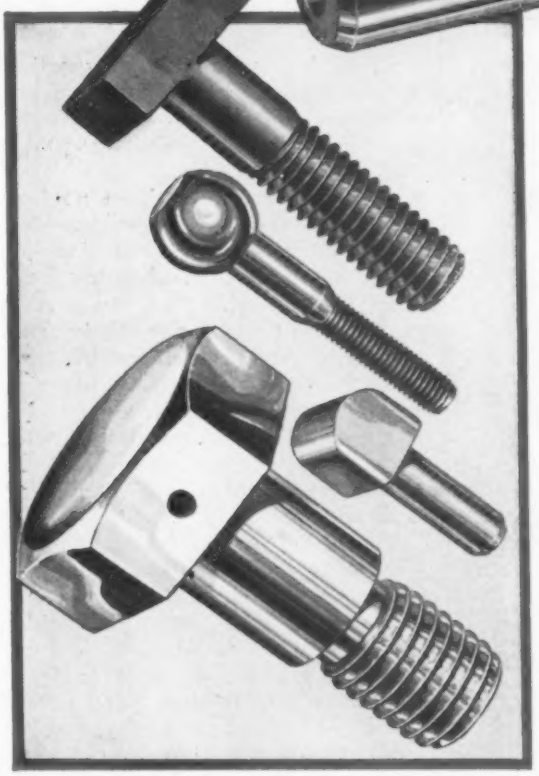
The directory lists numerical codes opposite the items or classes of items. These codes refer to the various purchasing offices across the country which buy the particular items.

Once the businessman has located

(*Please turn to page* 272)

Which is the CleCap?





...it could be both _____ made by fast economical CleCap processes

It just might pay you to take a good look at the special parts you're buying that could be made more economically by CleCap's hot or cold extrusion processes. Quite a number of our customers have done it . . . and they like what happened.

The forged blank (a) above was produced for one user. He finished it as it's shown at (b). CleCap pre-forms your non-standard parts for further shaping and machining in your plant or manufactures them complete, ready for your assembly line. You'd be surprised at all the different shapes we've turned out.

You can save yourself tooling and machine time. Take a look at what CleCap offers—engineering skill and experience in applying high production methods and machines to your problems. Anyway, write for folder, "Specials by Specialists".

Cleveland *Top Quality* Fasteners

FERROUS AND NON-FERROUS

Hexagon Head Cap Screws • Socket Head Cap Screws—Plain & Knurled; also Flat and Button • Flat Head and Fillister Head Cap Screws • Place Bolts • Structural Bolts • Tractor Bolts • Square Head Set Screws • Socket Set Screws • Milled Studs

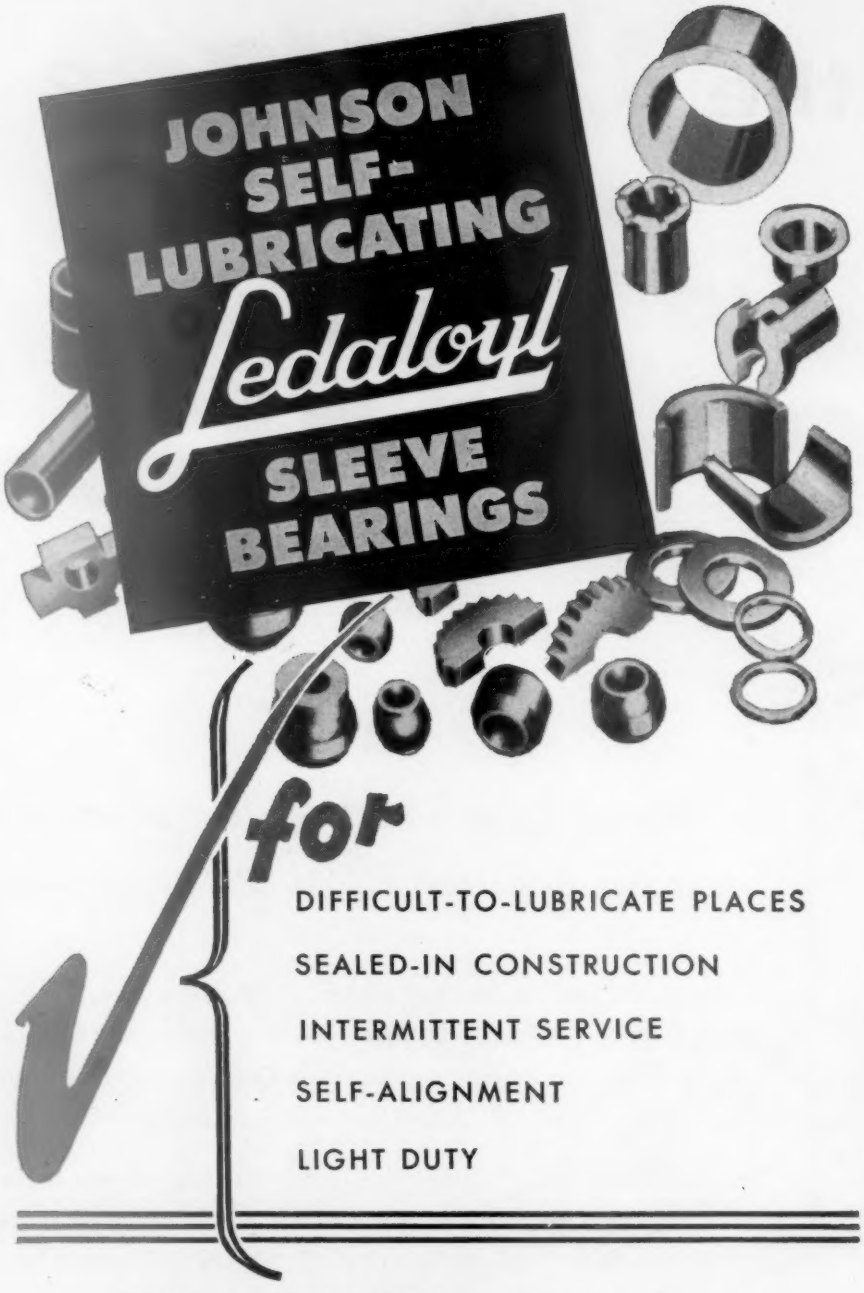
The Cleveland Cap Screw Co.

2922 EAST 79th STREET • CLEVELAND 4, OHIO

VUlcan 3-3700 TWX CV42

Originators of the Kaufman DOUBLE EXTRUSION Process

For More Information Circle No. 297 on Inquiry Card—Page 17



for

DIFFICULT-TO-LUBRICATE PLACES

SEALED-IN CONSTRUCTION

INTERMITTENT SERVICE

SELF-ALIGNMENT

LIGHT DUTY

POWDER METALLURGY made possible this versatile bearing . . . molded pre-cast bronze alloy powder impregnated with oil for self-lubrication. Myriads of tiny, evenly spaced pores serve as miniature oil wells. When the bearing is in use the oil is metered to the shaft . . . when at rest, the oil is reabsorbed by the bearing. These Ledaloyl bearings are widely used for small motors and fans, and have wide acceptance for self-aligning applications. Their extremely low cost, (no machining necessary), makes them practical for use in many types of equipment where heavy duty is not a factor. A wide selection of plain, single flanged, double flanged and self-aligning Ledaloyl bearings is available from distributors' stocks, while special sizes and styles of bearings and parts can be made to order. Write for complete information.

JOHNSON BRONZE CO., 450 South Mill St., New Castle, Pa.

JOHNSON B BEARINGS
Sleeve-Type

OTHER BEARING TYPES:
General Purpose (GP) • Electric Motor (EM) •
Graphited • Universal Bronze Bars • Babbitt

For More Information Circle No. 298 on Inquiry Card—Page 17

(*Continued from page 270*)

the purchasing offices which buy the products in which he is interested, he should apply for listing on their bidders' lists.

The directory also gives information on other SBA publications, explains important clauses in Government contracts, tells how a small firm can obtain subcontracts, and explains the advantages to small firms of listing their facilities with their SBA regional and field offices.

* * *

Engineering Jobs Plentiful; Hiring More Selective

June engineering graduates are finding jobs as plentiful as ever, but employers are becoming more selective in their hiring.

That's the college employment picture as described by Earl C. Kubicek, director of placement at Illinois Institute of Technology, Chicago.

"The days when the prospective employee could put his feet on an employer's desk and say, 'What's your offer?' are definitely past," Kubicek explained.

Although there has been no let-up in the demand for engineering graduates, all companies are exercising more care in choosing employees, he said.

"It wasn't long ago that most companies would hire anyone who could handle the job. Now they are looking for applicants who show the greatest promise and who will stay with the company, and not move to another firm or field," Kubicek stated.

There are fewer jobs available with large companies this year, but medium-sized and small firms have taken up the slack, according to the IIT placement director.

The drop in job offers from large companies was attributed by Kubicek to a backlog of qualified personnel within the firms. He believes it is a temporary condition that will remedy itself.

June engineering graduates at Illinois Tech are averaging seven and a half interviews, about the same number as last year, Kubicek said. More than 500 companies throughout the nation have sent representatives to the school, he added.

Although salary figures are incomplete, it appears that the average June engineering graduate will earn $375 a month as starting pay. This is about $13 higher than a year ago.

Sure, that old pump still works,

but how much does it cost to keep?

That rugged old pump of yours may not be the bargain that it seems. Let's do some arithmetic. If the efficiency of the old pump is 75% vs. the 85% efficiency of the new pump, you are paying more to keep it than you would to replace it. That's because a new unit of equivalent output uses less power. Thus it soon saves its own cost — then begins to pay dividends.

Let's take a specific example—a small general service pump

Old pump efficiency 70%	**28.9 BHP**
New pump efficiency 79%	**25.6 BHP**
	3.3 BHP Saving

On the basis of 1¢ per KWH, the 3.3 BHP saving for a 6000-hour year (approximately 16 hours per day) amounts to $150. This saving, capitalized in 4 years at 4% adds up to $630. Yet the price of the new pump that saves $630 is only $438.

What would the pump replacement profit be in your particular case? Your De Laval representative can tell you exactly — in dollars and cents — as soon as he has the basic facts on your present installation. Call him in today or write to De Laval for Pump Fax Bulletin which includes a valuable "power-savings" chart.



DE LAVAL *Pumps*

DE LAVAL STEAM TURBINE COMPANY
807 Nottingham Way, Trenton 2, New Jersey

DL-237A

For More Information Circle No. 299 on Inquiry Card—Page 17



CHASE PROTEX BAGS—TOPMILL burlap or cotton... laminated to crinkled kraft with waterproof adhesive. With or without dry-seal closure.



CHASE RED TYE DRAWSTRING BAGS—Wide variety of sizes and shapes. Made of quality cotton rayon or nylon for mailing and storage of parts and samples or new products.

CHASE CRINKLED OR CRINKLED AND PLEATED LINERS—Waxed or unwaxed protective liners for bags, barrels, boxes and drums. Sizes to meet every requirement.



CHASE SHARKRAFT BAGS—Every-ply crinkled Multiwall Bag that provides elasticity to resist rough usage. Available in 2 to 5 plies.





CHASE BARREL COVERS AND DRUMHEADERS—Neoprene treated kraft paper or waterproof Protex—CHASE makes both kinds for all commercial uses.

CHASE MULTIWALL PAPER BAGS—Available in 2 to 5 plies for every industrial use. A low cost, fast filling, safe shipping bag.

Rely On CHASE Bags ...Rely On Your "C"-Man

Want a packaging expert on your staff but not on your payroll? Call your "C"-Man, your capable Chase Bag representative backed by 107 years of know how. Chase packaging products are made from quality material—sharply and clearly imprinted. You can't put your product in better bags... you can't put your problems in more capable hands.

Call your nearest Chase Representative for samples and current prices.

WRITE DEPARTMENT 29-E





CHASE POLYTEX PLASTIC BAGS AND LINERS—Clear, odorless, moisture-proof Polyethylene. Non-toxic and air-tight. Available with or without printing

CHASE PROTECTIVE PAPERS—CHASE DUPLEX, smooth or crinkled, laminated kraft in rolls, sheets, or die-cut for every industrial use.





CHASE SAXOLIN OPEN-MESH BAGS—Available in various sizes and colors. For all produce and citrus. Provides visibility and good ventilation.



CHASE TWINES—CHASE offers a complete line of twine and thread for all commercial uses.

CHASE REDI-RAPT TUBING—Bias sewn burlap or cotton tubing with two-way stretch for wrapping all hard to wrap items. One size fits several packaging circumferences.

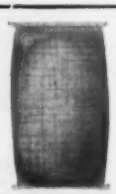


CHASE COTTON BAGS—Available in various sizes. Made from finest sheetings, print cloths and osnaburgs.





CHASE BURLAP BAGS—CHASE TOPMILL burlap bags are famous for strength, uniformity and good looks. Made of India Jute.



CHASE PARASAX BAGS—"Parasax" provides an ideal bag for food products, chemicals and many other products that require complete protection from the elements.

CHASE BAG COMPANY

General Sales Offices: 309 W. Jackson Blvd., Chicago 6, Illinois

30 BRANCHES AND SALES OFFICES... STRATEGICALLY LOCATED

For More Information Circle No. 300 on Inquiry Card—Page 17

Electronics Guide For Buying Radio-TV Components, Material

"Who's Who In Electronic Distribution," compiled, edited and published by Who's Who in Electronic Distribution, 846 Leader Bldg., Cleveland 14, Ohio. 376 pages, 8¼ x 11¼ inches. Cloth bound and thumb indexed.

Marking the first time that extensive procurement source data in the electronic parts and equipment distributing field has been available in book form for purchasing agents, engineers, designers and others interested in such products, Who's Who In Electronic Distribution is designed as a primary source guide for buyers of radio-television-electronic components and equipment.

Listing thousands of sources of electronic parts, the volume contains alphabetical listings of manufacturers, manufacturers representatives and parts distributors. A special feature of the 1954 edition is a listing of electronic parts distributors catering to industry-type accounts. Distributors in this section of the book are listed by localities under the names of the manufacturers whose products they stock and sell. An alphabetical listing of more than 1000 product trade names with the companies using them identified is a feature of the volume.

Paper and Board Production Maintained at High Levels

Paper and board production for the first six months of this year totaled approximately 13,100,000 tons, slightly under production for the first half of 1953, a record year. E. W. Tinker, executive secretary of the American Paper and Pulp Association announced that paper mills, although their capacity was slightly higher than last year, were operating at 93 per cent of capacity, approximately the same as in 1953. Paperboard mills have been operating at about 90 per cent of capacity, about 5 per cent under last year. If the present rate of production is maintained for the last half of the year, it could well be that the industry will come very close to equaling the record 26,460,000 tons produced in 1953.

Use Inquiry Card—Page 17 For More Information on All Products in This Issue

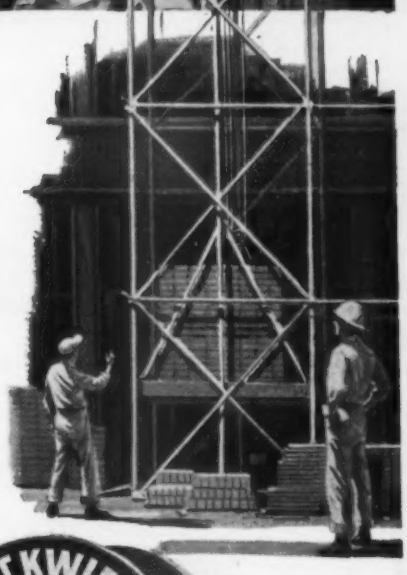


MUSCLES OF STEEL
took the load off his back

Sweat and a strong back just aren't enough when it comes to meeting the stepped-up demands of modern construction work. Today's contractors and builders call on *muscles of steel*—sturdy wire rope—to lift and carry their heavy loads.

Supplying these *muscles of steel* to the giant that is American industry is our big job here at Wickwire—a job that has commanded our vigilant care and painstaking quality control for over half a century.

In the mines and the quarries. In the logging camps and the oil fields. On construction and highway projects. With the fishing fleets and in materials handling. Wherever wire rope is used, Wickwire Rope has earned an outstanding reputation for efficiency, utmost safety, long economical service and unfailing reliability.



every industry benefits from wire rope

WICKWIRE ROPE

CF&I PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION



2487

THE COLORADO FUEL AND IRON CORPORATION—Atlanta (Tex.) • Denver • Houston • Odessa (Tex.) • Phoenix • Salt Lake City • Tulsa
PACIFIC COAST DIVISION—Los Angeles • Oakland • Portland • San Francisco • Seattle • Spokane
WICKWIRE SPENCER STEEL DIVISION—Buffalo • Chattanooga • Chicago • Detroit • Emeryville (Pa.) • New Orleans • New York • Philadelphia

For More Information Circle No. 301 on Inquiry Card—Page 17



Precision gears
in quantity—at competitive prices!

PERKINS GEAR ENGINEERING SERVICES extend from coast-to-coast. Hence, no matter where you are located, we will gladly—and promptly—furnish estimates on your requirements for custom-made gears, and consult with you on the possibility of obtaining a more economical and highly efficient source of supply for the precision gears you require.

We do not manufacture stock gears. But once your specifications are in our files, re-orders are filled promptly—*and delivered on time*. We are equipped to produce gears in any quantity, any type, any material, metallic or non-metallic.

Let us present our conception of a modern and *mutually* advantageous gear engineering service. No obligation of course.

YOU FURNISH THE SPECIFICATIONS, WE'LL PRODUCE THE GEARS!

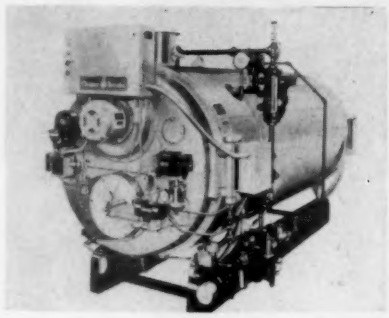
PERKINS MAKES: helical gears, bevel gears, sprockets, ratchets, worm gears, spiral gears, spur gears with shaved or ground teeth, ground thread worms.

NOTE: The PERKINS PRECISION SPRING COILER is the latest development in the spring coiler field and eliminates entirely the use of arbors and long set up time. It is a complete self-sufficient machine and enables you to make the spring you want when you want it—in seconds. The coiler produces any type of spring, in any diameter and any pitch with this range: Wire sizes .005 to .125. Diameter, from 3/32" to 12" and larger. Size of the compact coiler is only 7½ x x 16". A POWER MODEL mounted on a welded steel console cabinet base is also available. Full information on request.

PERKINS
MACHINE & GEAR COMPANY
WEST SPRINGFIELD, MASSACHUSETTS

For More Information Circle No. 302 on Inquiry Card—Page 17

New Boilers Work Quietly



Self contained steam or hot water boilers for processing or heating, with 50, 60, 70 and 80 hp capacity have been introduced by the Cleaver-Brooks Co., 326 East Keefe Ave., Milwaukee 12, Wis. Their remarkably low decibel ratings make the units ideal wherever noise is objectionable. Models are available to handle all grades of fuel oil, #2 to #6 Bunker C. Oil pre-heating equipment is attached to the motor frame. The new oil pump with gear head motor cuts pump operational noise. Greater heat absorption is gained in four-pass construction. Minimum efficiencies of 80% are guaranteed by the manufacturer, when firing with oil.

Forming and Bending Aluminum

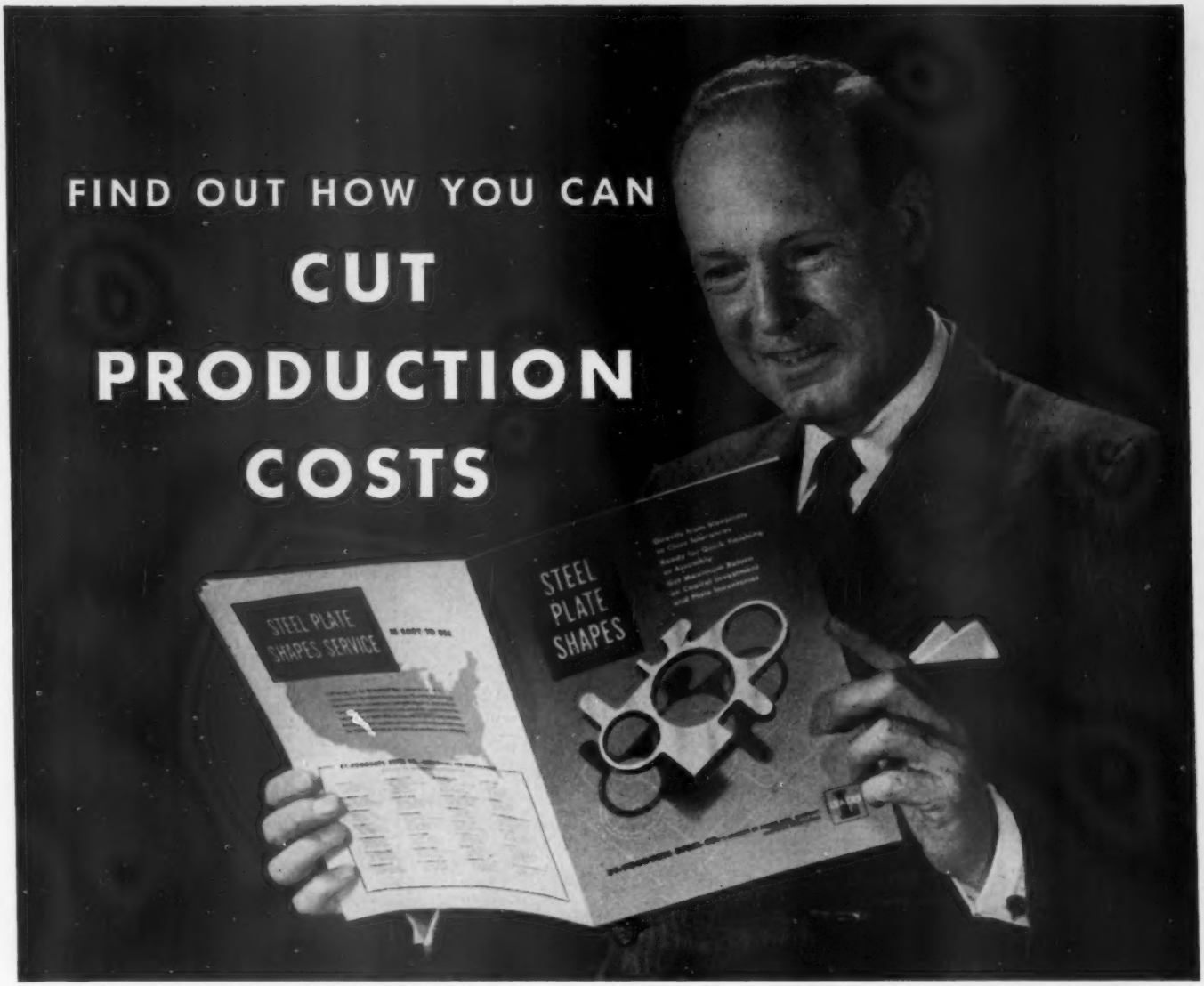
Practical procedures and technical advancements in forming and bending aluminum are presented in a 272-page book published by Kaiser Aluminum & Chemical Sales, Inc.

Entitled "Forming and Bending Kaiser Aluminum" the book gives comparative data on various types of forming and bending equipment; characteristics of specific alloys and their suitability to particular operations; comparisons of methods, and technique suggestions to solve specific production problems.

A comparative study of aluminum with some of the ferrous metals is made for different applications to assist in product design.

The book contains more than 200 illustrations including photographs, charts, tables and drawings to clarify the comparisons of forming and bending methods, machines and tooling.

"Forming and Bending Kaiser Aluminum" may be obtained free of charge when requested on company letterhead, or at a cost of two dollars ($2) for personal libraries. Copies are available from the Technical Editor, Kaiser Aluminum & Chemical Sales, Inc., 919 North Michigan, Chicago 11, Illinois.



This new book on Steel Plate Shapes Service can show you how to save time, money and manpower in production with preformed component parts. Here's how this booklet can help you to cut production costs.

Steel Plate Shapes Service helps you eliminate one or more production steps, free your machines for other work, speed your manufacturing operations. Formed to close tolerances from rolled steel plate, these shapes save fit-up time . . . can often be used without machining. You save by paying freight only on the part you use, reduce costly steel plate inventories, get rid of the headache of scrap handling and scrap losses.

You get plate that's shaped to save you money—formed to your specifications. We work directly from blueprints. Over 150 major machines are available to flame-cut, shear, blank, press, bend or otherwise form rolled steel plate. Parts can be furnished as formed, or rough- or finish-machined. We also maintain a large stock of standard dies of all types.

FOR FULL INFORMATION on Steel Plate Shapes Service, send for Bulletin 712. The coupon or a request on your company letterhead will bring a free copy at no obligation. Address By-Products Steel Co., 672 Strode Avenue, Coatesville, Pa.

LUKENS

BY-PRODUCTS STEEL CO.

A Division of
Lukens Steel Company

BY-PRODUCTS STEEL CO.
672 Strode Avenue
Coatesville, Pa.

Please send me a free copy of Bulletin 712.

NAME.....

TITLE.....

COMPANY.....

CITY.....ZONE.....STATE.....

For More Information Circle No. 303 on Inquiry Card—Page 17

Proved Under PUNISHMENT

STANDARD CYLINDER TUBING

"Mirror Finished" to precision tolerances, it's used in automobile shock absorbers, power steering, hydraulic pumps . . . without further sizing or finishing.

Here's a busy part of an automobile shock absorber that's built for brutal punishment. It's Standard's modern "mirror-finish" Cylinder Tube. So that it won't weaken or leak under punishment, every inch of this tubular "toughie" must measure up to exacting specifications—in cylinder finish . . . in I.D. tolerances as close as .001" . . . in extreme uniformity of wall thickness and concentricity . . . in internal pressure resistance, to shocks up to 9000 P.S.I. The elimination of broaching or further processing of any kind effect significant savings for our customers in product assembly.



As you see here, the engineering involved behind the application of tubing to your product is *more than skin deep at Standard.* Our engineers will gladly show you why in helping you with your tubular application—whether it involves a simple structural or mechanical member . . . or a precision application.



Send for 8-page folder on all Standard products or see Sweet's Design Catalog.



MAKE "STANDARD" YOUR SOURCE FOR—

- WELDED MECHANICAL TUBING
- WELDED STAINLESS TUBING
- BOILER AND HEAT EXCHANGER TUBING
- EXCLUSIVE "RIGIDIZED" PATTERNS

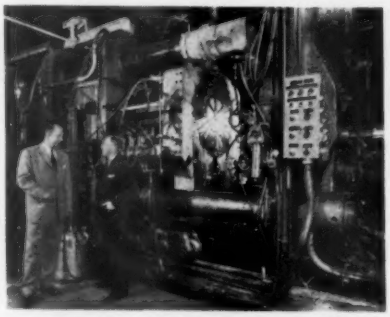
STEEL TUBING SIZES: ½" O. D. TO 5½" O. D. — .028 TO .260 WALL.

STAINLESS SIZES: ¼" O. D. TO 4½" O. D. — .020 TO .154 WALL.

For More Information Circle No. 304 on Inquiry Card—Page 17

Giant Machine Makes Die Castings Up to 200 lbs.

The world's largest die casting machine was recently unveiled by the Doehler-Jarvis Division of the National Lead Co. Designed to open new markets for die castings, it was developed jointly by Doehler-Jarvis and the Kaiser Aluminum & Chemical Corp.



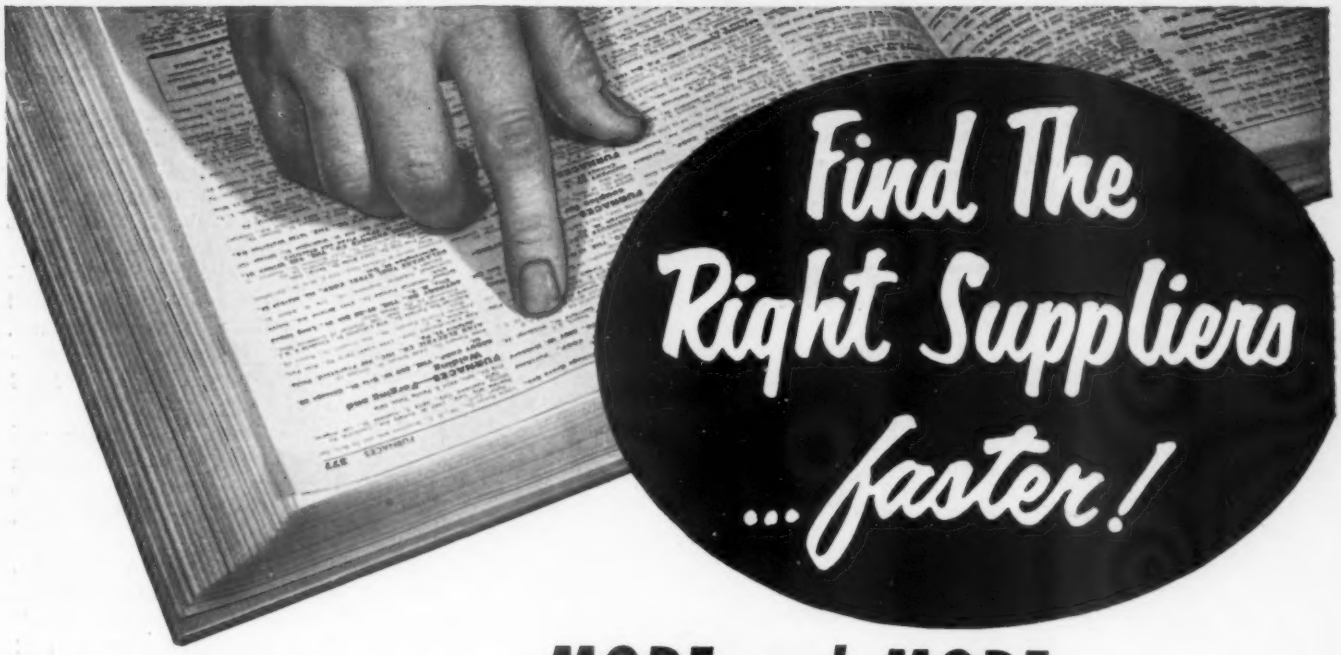
A. F. Bauer, chief engineer of Doehler-Jarvis, and F. J. Koegler, general manager, stand before the largest die casting machine ever built.

Zinc die castings weighing up to 200 lb. and 75 lb. aluminum castings are now possible. Doehler engineers believe that the biggest market for the machine's capacity is aluminum die castings for automotive manufacturers. With weight becoming an increasing problem in auto design, they visualize die cast motor blocks, deck lids, instrument panels, door frames, etc. Many applications can be sold because of their cost reduction possibilities. Die castings can be designed so that they replace a number of smaller parts. The result is reduced assembly and machining costs.

The machine can make 30 "shots" per hour of a 75 lb. aluminum casting. At this rate of operation, two furnaces are supplying more than 2,250 lbs. of molten aluminum hourly. Metal is forced into the dies at a pressure of 6,200 psi. First product of the new machine is a cable reel flange which was previously made of wood.

Metal Statistics Book

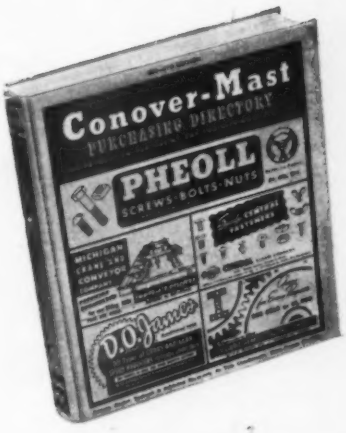
A pocket-sized reference book, called "Metal Statistics" has been published by the American Metal Market Co. It is the 47th annual issue of the reference guide. It contains up-to-date, as well as historical records of production, consumption, stocks, imports and exports, monthly and annual market price averages, as well as information on miscellaneous economic subjects. It can be obtained from American Metal Market Co., 18 Cliff St., New York 38, N. Y., for $3.00 per copy.



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Exclusive New England Representatives for Cleveland Cap Screw Co.

For More Information Circle No. 305 on Inquiry Card—Page 17

LPG Powers UL Approved 3000-5000 lb. Fork-Lift Truck

Underwriters' Laboratories has granted its first approval and listing for a fork-lift truck powered by liquefied petroleum gas (LPG) to Clark Equipment Company's Carloader model machine.

The LPG-Carloader is a standard model fork truck in 3000-5000 lb. capacities, with conventional, Dynatork or Hydratork transmission factory-modified for LPG operation.

LPG, a mixture of butane and propane under pressure, burns clean without giving off obnoxious fumes and leaves no unburned carbon, lead compound or varnish deposits. Because it is a dry gas, there is no liquid to dilute the cylinder lubricant or crankcase oil. The result is less wear on cylinder walls and bearings, and longer life for the lubricating oil.

The engine is modified to operate at a high compression ratio (8 to 1) to take better advantage of LPG's higher octane rating and to provide maximum efficiency, fuel economy and engine power. Also, a cold intake manifold is used, since the fuel is already a gas when it enters the manifold and does not require a hot spot as does gasoline.

To provide longer engine life, stellite-faced valves and seats and positive valve rotators are used in the LPG-Carloader engine, the manufacturer reports. These are desirable, it is claimed, because LPG has a tendency to burn conventional valves due to its higher flame temperature.

New Standards for Transformers

Publication No. TR 1-1954 covering the NEMA Standards for Transformers, developed by the NEMA Transformer Section, has just been released by the National Electrical Manufacturers Association. The new standards give practical information on the rating, performance, testing and manufacturing of power and distribution transformers in accordance with present-day practices in the industry. The new book completely supersedes the old publication, No. 48-132.

The standards are bound in paper covers but are punched for ring binders. They may be secured from the National Electrical Manufacturers Association, 155 East 44th Street, New York 17, New York at $3.00 per copy.

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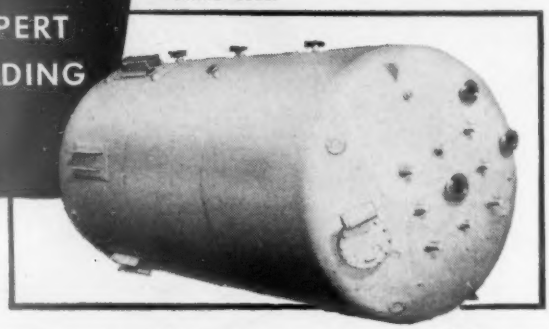
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BALL AND ROLLER BEARINGS

For More Information Circle No. 306 on Inquiry Card—Page 17

EXPERT WELDING

Fermenter built at Downingtown of 10% type 304 stainless clad steel. Diameter, 12' 0". Height, 22' 7". Fitted with coils of 3" O.D. stainless steel tubing. Meets ASME Code.



Check for accuracy . . . for strength . . . for neatness. You'll find that pressure vessels and process equipment fabricated at Downingtown Iron Works rate high on any check list. *Expert welding* is one of the reasons why. It's a highly developed skill at Downingtown.

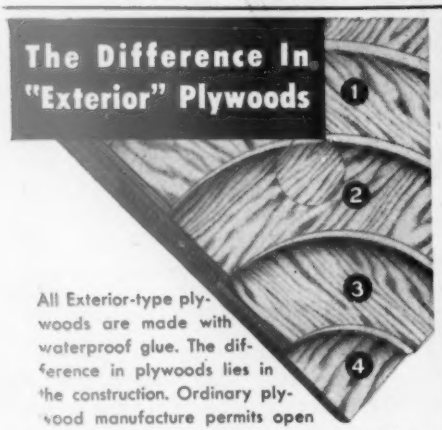
We've developed special welding techniques — approved for ASME code work—which result in sound, strong, neat welds. Experienced welders skillfully perform automatic submerged arc, gas-shielded arc and other welding processes. Welds are X-ray inspected as required.

Downingtown is thoroughly experienced in fabricating various grades of carbon steel, stainless steels, nickel clad, stainless clad, Monel clad, cupro nickel, aluminum, and many other alloys. Write for further information.

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Pressed Steel Tank Company
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Manufacturer of Hackney Products

CONTAINERS AND PRESSURE VESSELS FOR GASES, LIQUIDS AND SOLIDS
For More Information Circle No. 307 on Inquiry Card—Page 17

The Difference In "Exterior" Plywoods



All Exterior-type plywoods are made with waterproof glue. The difference in plywoods lies in the construction. Ordinary plywood manufacture permits open defects and knotholes in inner plys—resulting in troublesome "core gaps."

SUPER-Harbord fir plywood and Harborite plastic-faced plywood are made with extreme care. Only Harbor's special waterproof, boilproof, freezeproof glue is used. In addition:

1. Only prime heartwood used, no sapwood.
2. Inner plys machine-edged and butted.
3. All solid wood core—no gaps.
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ABERDEEN WASHINGTON

Sales Offices and Warehouses in Aberdeen, Atlanta, Chicago, Cincinnati, Indianapolis, Jacksonville, Los Angeles, Oakland, San Francisco and Tampa.

For More Information Circle No. 308 on Inquiry Card—Page 17

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For More Information Circle No. 309 on Inquiry Card—Page 17

Interstate and Intrastate Transportations

(*Continued from page* 126)

hold that if a forwarding shipper, or "forwarder", has no legal interest in the shipped goods and merely acts as agent for the shipper, the title to the shipped merchandise rested with the consignee or purchaser who is the proper party to maintain a suit against the liable carrier for loss or injury to the shipped merchandise.

This situation, however, never exists when the forwarder assembles the various lots of goods for shipment in carload lots and through bills of lading, or otherwise, assumes the responsibility for the safe transportation of the merchandise from the point of receipt to the point of destination. As above mentioned, under the latter circumstances, the forwarder automatically assumes "common carrier" liability to the shipper or consignee. See Merchant Shippers Ass'n v. Kellogg Express & Draying Company, 164 Pac. (2d) 852.

* * *

Shell Molding

(*Continued from page* 91)

around or roughly handled like ordinary castings because the customer often uses them as they come, and the smooth surfaces and sharp corners must be protected. Knockout and cleaning is faster, but more critical. Patterns must be designed and made differently, and the mold making procedure itself must follow a different set of rules than in other methods. The entire department should be carefully planned and integrated along new lines.

In the event of war, shell molding would probably prove to be a highly important factor in the production of ordnance, not only because of its many commercial advantages, but also because of its saving of vital materials, its use of less skilled help, and the light weight of the molds, which permits the use of women operators.

Where applicable, the process is capable of producing more molds per hour than any other method known today. Undoubtedly, continued technical development will further expand its advantages and application possibilities. It is already earning its way in economy and quality, and all those who purchase castings will do well to examine the possibilities of shell molding both for new parts and current castings.

For More Information Circle No. 310 on Inquiry Card—Page 17→



any way you look at it...

from grinding wheels to grain







SIMONDS means superior grinding

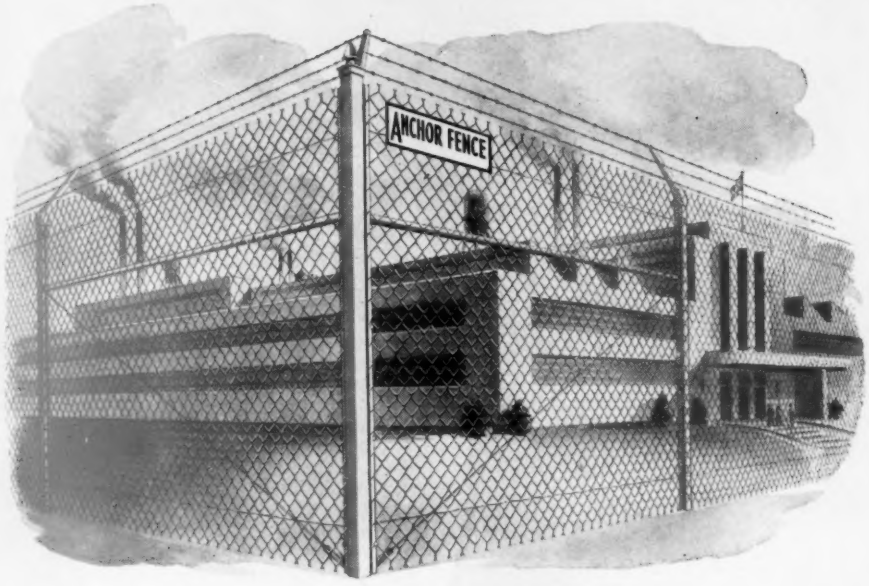
Fast, economical stock removal in high or low speed snagging! Micro-inch accuracy in precision grinding! Cool, non-burning action on expensive tool steels! No matter *how* you define "superior grinding", there's a Simonds product to fill the bill. Grinding wheels any size, any shape...also, mounted wheels and points, abrasive segments, polishing grain. Order from your Simonds' distributor.

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says "Keep Out" to thieves, vandals, trespassers.





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An Anchor Fence gives *lasting* protection. Exclusive deep-driven anchors hold this Anchor Chain Link Fence erect and in line regardless of soil and weather conditions . . . yet fence can be moved quickly and easily to new locations. Square, tubular steel end, corner and gate posts enhance appearance, give greater strength. H-beam line posts increase installation durability. Square, tubular steel frame gates, arc-welded at the corners for greater strength, complete an Anchor Fence industrial installation.

Reduces losses, prevents damage, enables outdoor storage, frees valuable factory space, adds attractiveness to plant grounds! Yes, an Anchor Fence does all this. No wonder industry insists on the genuine Anchor Fence. For more information, write:

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Plants in: Baltimore, Md.; Houston, Texas; and Los Angeles, Calif.
Branches and warehouses in all principal cities.

For More Information Circle No. 311 on Inquiry Card—Page 17

Product Valuation

(*Continued from page* 70)

ondarily, and in a lesser degree of importance, they should be in good relationship. Also, the costs of both together must be less than the product output or performance, in order to obtain the essential net return, or profit.

Of course, the costs of acquisition and of utilization are relative also, since a part of the cost of operation is depreciation based on the original cost of possession.

Clearly, the proportionate costs of purchase, manufacture, and use, and their sound relationship to performance, are factors in producing a profit. Therefore, they are vital elements in product valuation.

Summary

How much is a product or service worth? Who can say? You can —through product valuation—if you will remember that:

1. Value depends upon the end result — accomplishment — performance.
2. Value is a matter of opinion and judgment which, in formulation, appraises purpose, quality, quantity, availability, all relative costs, and—finally—net return.
3. In industry, the determination of value in products, services, and components requires the best in cooperative endeavor and communication between Purchasing and all other functions, such as Engineering, Manufacturing, and Quality Control.

Engineering Grad Starting Salaries Leveling Off

Average starting salaries of engineering graduates are leveling off after spiraling for more than 10 years.

The stabilization trend was reported in a survey of starting salaries of June, 1954, engineering graduates at Illinois Institute of Technology.

Engineering students who received bachelor's degrees in June are earning an average salary of $363 per month, only $1 more than the June, 1953, class. The average beginning salary for the January, 1954, engineering class was $373.

The $10 drop in salaries since last January does not indicate a recession, but rather the advent of a period of stabilization, according to the institute.



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A. O. THALACKER, President, Detrex Corporation

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SHARONSTEEL
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For More Information Circle No. 312 on Inquiry Card—Page 17

American Business Abroad

(*Continued from page 72*)

also is going about its job in many new ways.

Through its various programs, the U. S. Information Agency is doing everything it can to create a favorable reception abroad for all Americans and American activities—both private and governmental.

However, as I have indicated, the government cannot possibly do by itself the public relations job for America which needs to be done overseas.

Therefore, we maintain an Office of Private Cooperation to assist private groups in their information and public relations efforts overseas. And we think our work with business groups is of such great importance that, despite an overall cut of about 40% in our appropriations for this year, we doubled the budget for our private cooperation staff.

In the last six months, for example, we have worked, in the national interest, with more than 450 private organizations, most of them business firms engaged in some aspect of foreign trade.

Government and business have a great interest in doing everything possible to improve the reception abroad for Americans and all activities by Americans. Working together we can do much to strengthen the ties of friendship and trade between our country and the rest of the free world.

Silicone Rubber Coating for Stratojet's Aileron Flap Seal

A new silicone rubber coating for the Boeing B-47 Stratojet's aileron flap seal — capable of remaining flexible and airtight at minus 67 F — has been successfully developed by the Irvington Varnish & Insulator Division of Minnesota Mining and Mfg. Co. The coating, compounded from the General Electric Company's SE-76 silicone gum, was selected for this application because of its unusual resistance to temperature extremes.

According to Irvington engineers, the aileron flap seal reduces turbulence along the Stratojet's aileron hinge line. They said that the new silicone-coated cloth, trademarked under Irvington's trade name "Irv-O-lon," would last from 3 to 10 times longer than the material it replaces. The operational bomber's aileron flap seal is also known as an aerodynamic balance seal.



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Yes, today's performance standards are higher than ever for motor generator sets. And the final examinations that *all* H-VW-M low voltage motor generators must pass before delivery have consistently raised industry standards for voltage regulation, power factor correction, overload capacity, and exceptionally long and efficient life for all parts. It's a painstaking, exacting process, but the net result is a line of generators that can't be beat.

Manufacturing top-quality generators is only one of many results of over eighty years of constant electroplating development – a continuing policy summed up in H-VW-M Platemanship...your working guarantee of the best that industry has to offer—not only in plating—current generators—but in every phase of plating and polishing.

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For More Information Circle No. 313 on Inquiry Card—Page 17

LETTERS . . .

USEFUL CHART

We are very much interested with the article "How Many Linear Feet in a Roll?" in your April issue. Our company wishes to compliment you and anyone else responsible for this chart, which we find is accurate. We wonder whether we could, with your permission, use it by copying it on a thicker type of card as an advertising medium and for distribution at conventions.

K. W. Shook, Pur. Agt.
Victor Balata & Textile Belting Co.
Easton, Pa.

● Permission granted. We have already republished this useful chart in response to readers' requests (see Letters page, April issue) and welcome the wider distribution of this helpful calculator.—Ed.

SURPLUS INFORMATION

Please advise us who publishes "Excess—The National Journal of Surplus", mentioned under F.O.B. (page 31) in the May issue of PURCHASING. We have advocated such a publication for a number of years, and are happy to find that some one has started a clearing house for surplus.

W. T. Fain, Supt., Pur. & Stores
Celanese Corporation of America
Pampa, Texas

Where may we procure a copy of "Excess—The National Journal of Surplus"? We should like to examine it to determine whether or not we should subscribe.

B. L. Foy, Tech. Librarian
Tennessee Valley Authority
Knoxville, Tenn.

● Federal Procurement Publications, Inc., 10-42 47th Road, Long Island City 1, N. Y.—Ed.

A MATTER OF INTERPRETATION

In the first paragraph of "The Pulse of Business" (June issue), I believe that some of the facts are being misconstrued and therefore do not indicate an upturn in business. You point out that auto makers seem bent on keeping output at a point to make 1954 the third best year. This may be true, production-wise, but the dealers don't seem to think so. They already have 700,000 unsold 1954 automobiles on hand, plus 100,000 1953 cars. These facts indicate that production is exceeding consumption. Regarding the basic metals, not all the contingencies are being considered. Assuming that you were referring to the increase in steel production, the increase is probably due to the fear of strike in the industry and a fear of price increase after negotiations Therefore, I would think that it is a bit early to say that stability is the chief feature.

O. E. Gabriele
Schenectady, N. Y.

● Differences of opinion, of course, are what keep economists and parimutuel machines in business.

Since January, the Federal Reserve Board index of industrial production has moved in a very narrow range. Prices have also remained remarkably stable, over-all. Historically, inventory adjustments are characterized by very sharp downward adjustments in both production and prices. Thus, we feel that the current adjustment is unique because of the relative stability of these two major indices.

It is true that the auto industry is in the middle of a tough selling period. But latest figures show that new car sales in June ran 8% above last year's figure for the same period.—Ed.

CASE STUDIES

In connection with our regular Personnel Development Program, we have used case studies. The majority of these deal with human relations and shop foreman problems. Could you furnish us with information where we could find case studies on purchasing principles, policies, and management?

J. M. Noble
The Standard Oil Company
Cleveland, Ohio

● "Procurement — Principles and Cases" by H. T. Lewis (R. D. Irwin, Inc., Homewood, Ill.) contains excellent, detailed case studies covering a broad range of purchasing topics. "Purchasing Principles and Applications" by S. F. Heinritz (Prentice-Hall, Inc., New York, N. Y.) has brief problem-type cases illustrating each chapter. The National Association of Purchasing Agents has issued a pamphlet of selected case studies especially for educational and training discussions. —Ed.

WAREHOUSE STORY REPRINT

In the March, 1954 issue of PURCHASING appears the article "Inventories Cut to Size", pages 96 and 97. Because of its interest, we would very much like to distribute this article to our members and your permission to reprint would be greatly appreciated.

Jehu R. Derrickson
Executive Secretary
Formed Steel Tube Institute
Cleveland, Ohio

● Permission granted.—Ed.

PSYCHOLOGICAL TESTING

We are exploring the possibility of using a psychological testing program for the selection of buyers and other supervisory personnel in our purchasing department. Can you put me in touch with purchasing departments of some other major firms throughout the country who have already pioneered this program?

J. C. Condon
Asst. to Director of Material
North American Aviation, Inc
Los Angeles, Calif.

● To date we know of no instances where a psychological testing program has been used specifically and exclusively for the selection of buyers and other purchasing personnel in supervisory capacities. Science Research Associates, 57 West Grand Ave., Chicago 10, Ill., has published a job-test chart which lists recommended tests and other evaluation techniques for various occupations. Included in the list are: purchase order typist and two types of purchasing clerk. Supervisory personnel are not covered.—Ed.

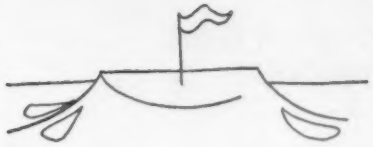
APPRECIATION

I wish I could only have words to express the magnitude of your Purchasing Magazine in spreading so many exclusive information to all devoted to the procurement career, purchasing agents like myself, and all through the commercial economy of the United States and the whole world.

I have subscribed to Purchasing ever since I found out it is the best magazine on the line.

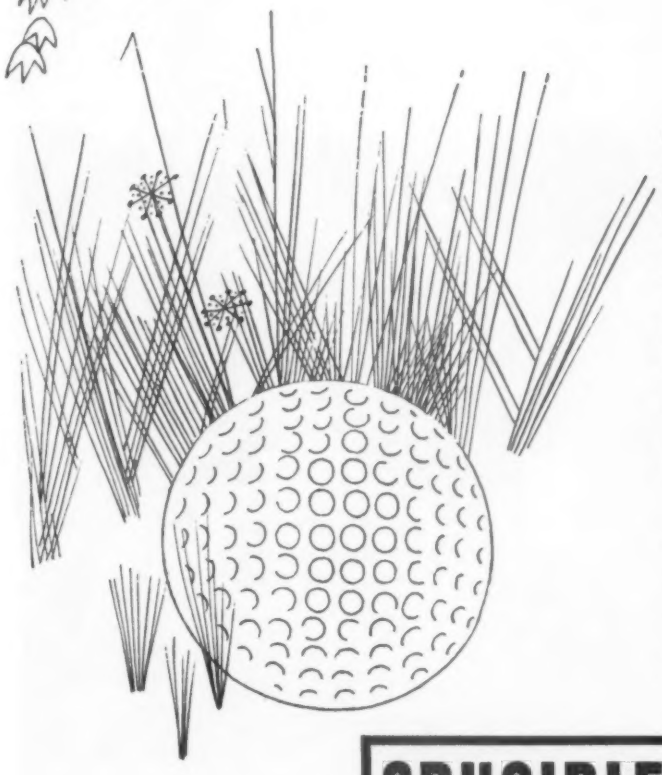
Julio Valentin-Esteves, P.A.
Commonwealth of Puerto Rico
San Juan, Puerto Rico





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There's no hunting for the right tool steel grade or size when you call Crucible. For *all* our branch warehouses, located from coast to coast, are fully stocked with a wide selection of tool steels. And they're all available for *immediate* delivery.

When you specify *Crucible* tool steels, you get uniformly high quality every time. That's one of the reasons we've been the country's leading producer of tool and special steels for over half a century.

So the next time you order tool steels, or any other type of special steel, it will pay you to *call Crucible.*

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For More Information Circle No. 314 on Inquiry Card—Page 17

Acknowledgment Is not Acceptance

(*Continued from page* 93)

"Until the offer was accepted and consideration furnished for the promise of the buyer, the buyer had a right to withdraw his offer and cancel his promise to pay even though the offer contained the clause that it could not be countermanded."

Interpretation by Custom

The law of these cases, that an offer to purchase, the buyer's order, may be countermanded at any time before its acceptance despite acknowledgments and promises to give such orders attention or other customary and polite phrases, saying much but meaning nothing, does not apply however, when a mere acknowledgment has been considered as importing an acceptance by both parties over a long series of transactions.

In a lawsuit in Tennessee on an open account for deliveries of paper the purchaser set up in its defense a counterclaim for $3,943.10 in damages for the failure of the manufacturer to deliver. The acknowledgment of the orders which the purchaser contended had been accepted had contained the provision, "Because of the present national emergency we do not guarantee prices, quantity or delivery. The price prevailing at the time of shipment will apply. This order is being entered for shipment when our schedule permits and no specific promise as to delivery can be made at this time."

In holding the purchaser entitled to recover under these circumstances without an express acceptance by the seller the Tennessee court said:

"We recognize the rule that a mere acknowledgment of receipt of an order without more is not an acceptance of the same. Likewise, the addition of mere words of business courtesy which do not convey the idea of acceptance do not make a contract. But expressions which are fairly susceptible of being construed as an acceptance will be so construed.

"In this case we are not dealing with one isolated transaction where we are confined to the document itself on which the parties have never acted. On the contrary we have a long course of dealing and many like transactions over the years where merchandise has invariably been delivered on this form of document without further communication between the parties. It nowhere appears that the seller ever rejected an order or stated that it would do otherwise than ship when conditions permitted.

"It seems to us therefore, that even if it could not fairly be determined from inspection of the acknowledgment alone that the same was an express acceptance of the order, the conduct and course of action of the parties show an implied acceptance."

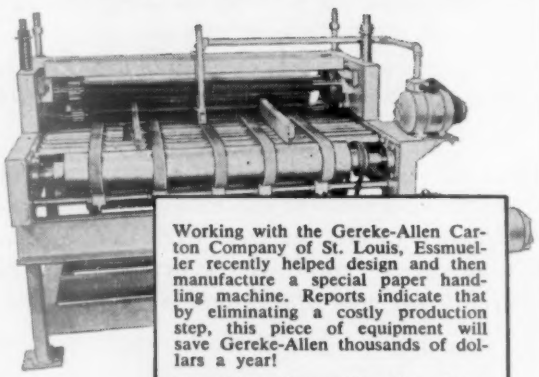
Silence Is Not Consent

But on the other hand, mere silence on the part of the seller upon receipt of an order has never been held by the courts to be an acceptance.

"It is the law," said the Arkansas Supreme Court in a recent decision, "that the receipt of an order imposes no obligation to sell and acceptance of such an offer is not to be implied from more silence. On the contrary, failure to accept within a reasonable time implies a rejection of the offer in which case no obligation rests upon either party."

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Essmueller helps Gereke-Allen "K.O." costly production problem!



Working with the Gereke-Allen Carton Company of St. Louis, Essmueller recently helped design and then manufacture a special paper handling machine. Reports indicate that by eliminating a costly production step, this piece of equipment will save Gereke-Allen thousands of dollars a year!

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For More Information Circle No. 315 on Inquiry Card—Page 17

NEW SIZE 2U IMPACTOOL



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The new 2U Impactool will do all these jobs—and do them fast—

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- drill
- ream
- tap
- drive and remove screws
- drive and remove studs
- saw holes
- drill masonry
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This newest and lightest Impactool has the time-proven Ingersoll-Rand impact mechanism that has an unmatched reputation for power and dependability in both air and electric Impactools.

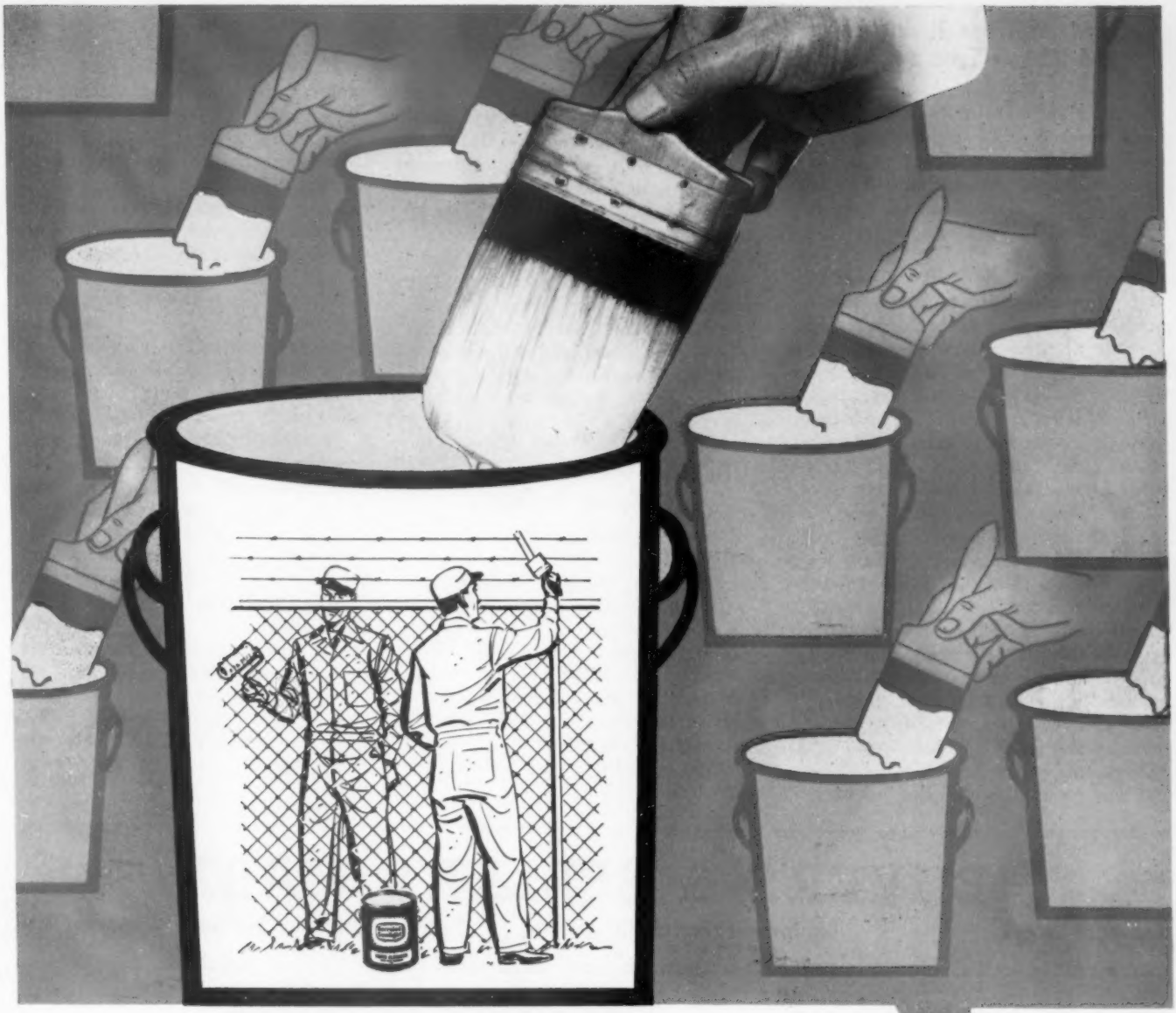
Ask for a demonstration of this new, powerful little Impactool. You'll find it featured by leading automotive jobbers and industrial distributors from coast to coast

SPECIFICATIONS

Capacity, bolt size	¼"	Impacts per minute	2100
Weight, less cable	5 lbs.	Square Socket Driver	⅜"
Free Speed	1750 rpm	Standard Voltage	110 volts AC-DC

Ingersoll-Rand
11 Broadway, New York 4, N.Y. 18-20
Originators of Impactools—Air and Electric

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In whitest white or clean, clear, wanted colors, there's a Barreled Sunlight Paint for every job

For More Information Circle No. 317 on Inquiry Card—Page 17

Sees Steel Use Rising to 200 Million Tons a Year

A rise in the use of steel within the next 25 years to a possible annual total of 200,000,000 tons was predicted by Joseph L. Block, president of Inland Steel Company. He spoke at the annual conference of the Indiana Manufacturers Association.

Mr. Block described the more than 50% expansion in national steelmaking capacity since pre-World War II as more than adequate for present civilian needs. This was indicated, he said, by the fact that current demand is satisfied with the industry operating nationally at only 70 per cent capacity.

Measured against the most extreme defense emergency, he said, the United States has 40 to 45% of the world's steel capacity within its own borders and "slightly worse than a standoff" in this essential war material should every mill outside the North American continent fall into enemy hands. All the mills of the free world, he said, have a capacity three and one-half times those in the Soviet orbit.

Nevertheless, he said, the 124,000,000 of ingot steel which the industry can now produce will not suffice for many years.

"The population is growing steadily, new uses for steel flow with regularity from the drawing boards and laboratories, and the standard of living of our people continues to rise," he said.

"These factors will combine to overtake and outstrip our 124,000,000-ton steel capacity before long.

"One might even be so bold as to predict that a day will come within the next quarter century when 200,000,000 Americans will each need a ton of steel ingots a year, a national requirement of 200,000,000 tons."

* * *

Bakelite Offers New Group of Epoxy Resins

A new and versatile group of epoxy resins and their hardeners is announced by Bakelite Company, a Division of Union Carbide and Carbon Corporation. The two new epoxies, Bakelite C-8 resins BR-18774 and BR-18795 combine with four new hardeners specially synthesized for them to form strong, lightweight products with excellent chemical resistance and electrical properties.

"Epoxy resins have gained sudden prominence because of their wide application in divergent industrial fields such as, potting electronic assemblies, automotive tools and forming dies," J. L. Rodgers, Manager, Bonding Materials Department, stated in making the announcement. "A rigidly controlled process developed by Bakelite Company, produces uniform high quality resins that cure to hard solids at low or room temperatures without applied pressure and with extremely little shrinkage. The excellent wetting ability of these new epoxies makes possible their combination with many types of first fillers."

Technically known as monomeric, low molecular weight diepoxides, BR-18774 and BR-18795 are characterized as rapid hardening, thermosetting resins with 100 per cent reactive components when formulated with their complementary hardeners. These hardeners, BR-18793, BRR-18812, BR-18803, and BR-18807 are aliphatic polyamines specially synthesized to give the new epoxies a wide range of curing speed, viscosity, and pot life. They may also be blended to obtain specific properties in the finished product.

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Purchasing Agent experienced in purchasing raw materials, components, machine products, and mill supplies for heavy industrial production. Administrative background supplemented by knowledge of construction, engineering and development. Southeast preferred. Write Box 1420, Purchasing, 205 East 42nd St., New York, N. Y.

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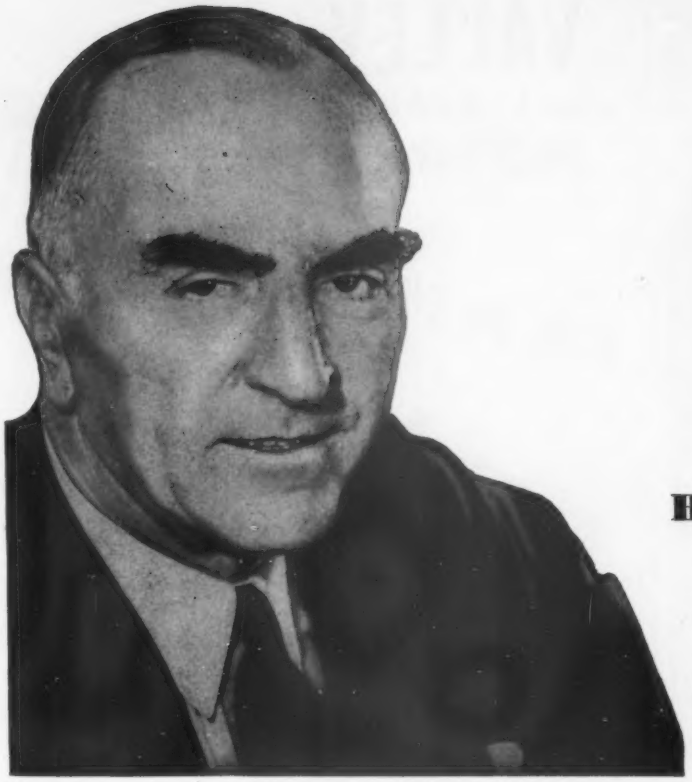
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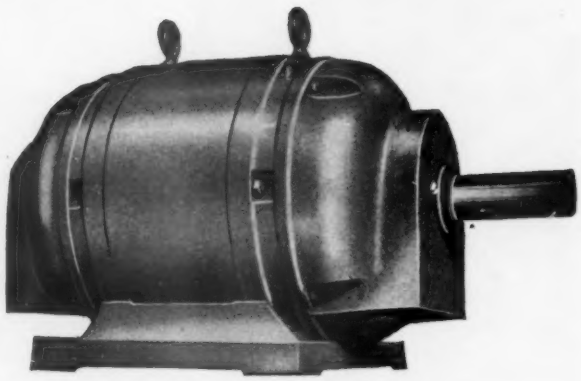
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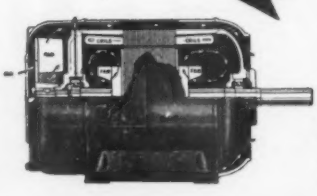
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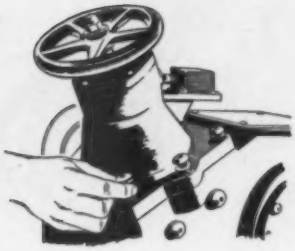
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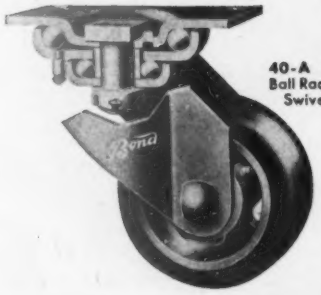
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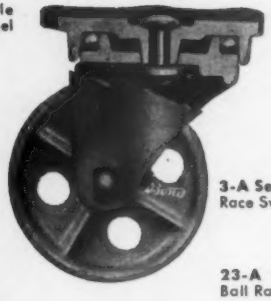
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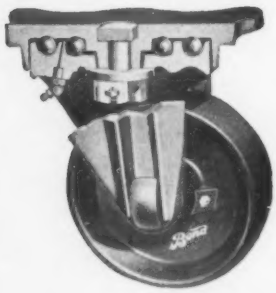


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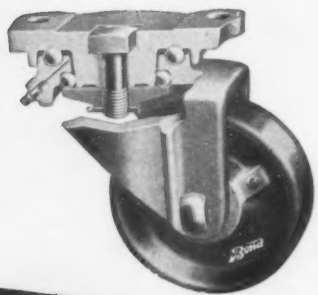
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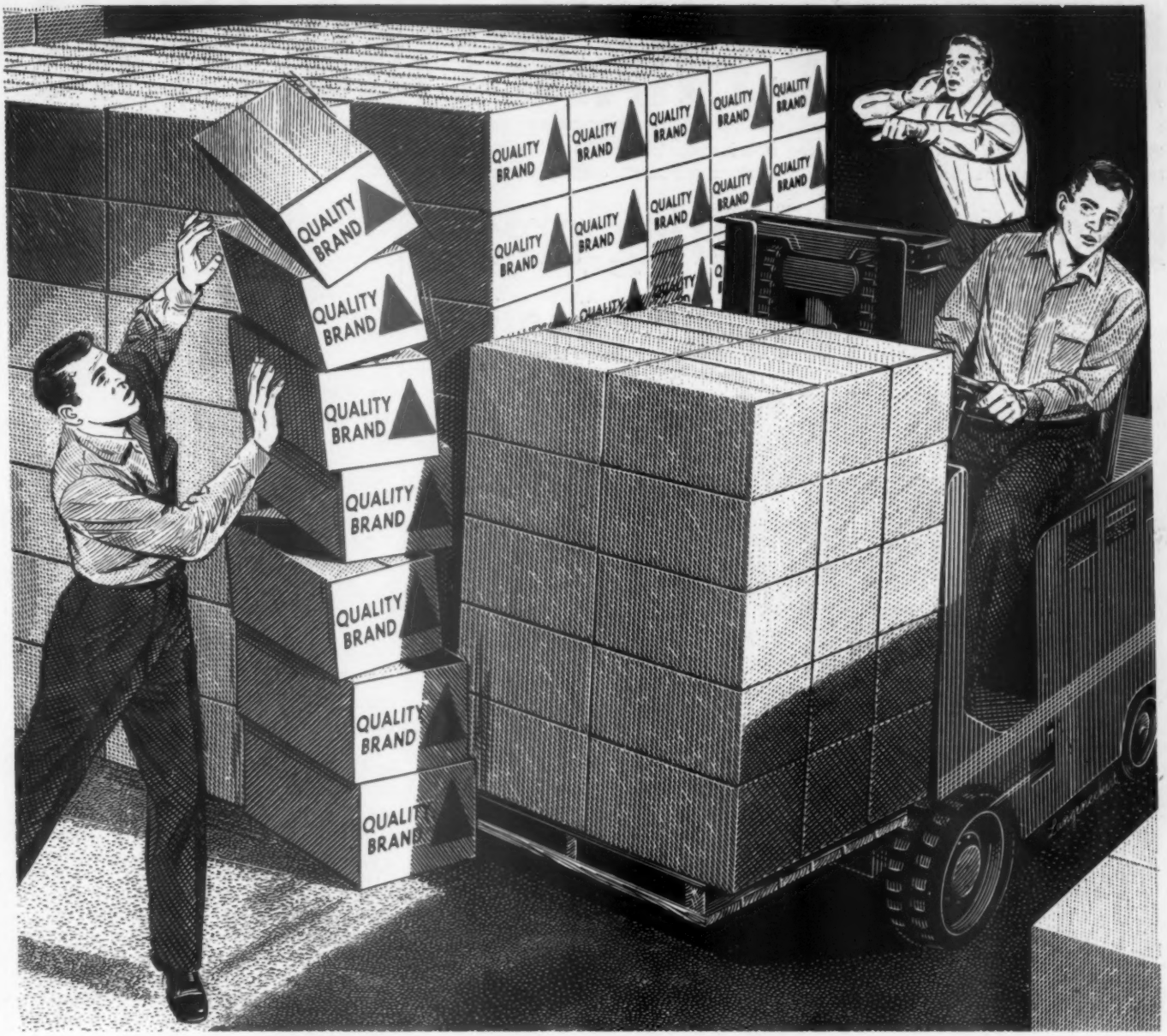
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"Wham!" The Extra Protection of Gaylord Boxes Pays Off Again!

Unexpected accidents can happen to your product any time—in factory or warehouse . . . in transit . . . in delivery.

The extra protection built into Gaylord Boxes helps bring your product to the point-of-sale in factory-fresh condition. This will reduce damage claims.

Many of the country's leading manufacturers learned long ago that the quality materials and construction of Gaylord Boxes assure *profit* protection through product protection.

A phone call to your nearby Gaylord sales office will put Gaylord engineering skill to work on your packaging problems.

GAYLORD CONTAINER CORPORATION

SALES OFFICES

Gaylord Boxes

General Offices: ST. LOUIS, MISSOURI

COAST-TO-COAST

CORRUGATED AND SOLID FIBRE BOXES • FOLDING CARTONS • KRAFT PAPER AND SPECIALTIES • KRAFT BAGS AND SACKS

For More Information Circle No. 325 on Inquiry Card—Page 17

MATERIALS-HANDLING NEWS

★ Panel Discussions by Bassick, World's Largest Manufacturer of Casters and Floor Protection Equipment ★

Bigger swivel bearing area keeps heavy loads steady



Reduces raceway wear, gives longer life, easier swiveling

Important in caster design is the diameter of the main swivel bearing and balls.

The larger this area, the greater the safety factor with proportionately less wear and tear on the caster. Avoid premature caster failure by specifying Bassick's — all have extra-quality design features. The Bassick series "99" quality, double ball bearing casters have a main swivel bearing diameter at least 1⅛ inch greater than the wheel tread width — for easier swiveling and *more-for-the-money* service.

Compare these dimensions with the casters you now use. Your best bet in the long run is Bassick's — they roll and swivel easier and last longer under hard service.

Dripping grease harms floors, boosts your maintenance costs



Sights like this can be a thing of the past in your plant, now that Bassick has perfected its new "3D" caster — no Drip, no Dirt, no Drag. Floor surfaces and rubber wheel treads are safe from damage by leaking lubricant because exclusive Bassick design features seal in grease, seal out dirt or other foreign matter. Write for new catalog sheet 3D99-53.



File test shows extra hardness of Bassick swivel bearing parts

If file bites into raceway surfaces of casters you now use, better think about buying Bassick. Double ball bearing swivel parts of all Bassick cold-formed steel casters are full case-hardened to 15N90 Rockwell. They'll pass your test with flying colors, pay off for you in extra years of wear.

1954, meet 500 B.C.!



U. S. Army Photograph

This striking photo does more than compress history into a single vivid shot of old and new crossing paths in the Orient.

For the lumbering ox-cart with its tremendous wooden wheels isn't much more out of date than some materials-handling systems we've seen in use today. Old-style, inadequate casters are about as far behind Bassick's new 16" "Floating-Hub" caster (below) for 20-mph service, for example, as the ox-cart is behind the airplane.

The safest way to protect cargoes susceptible to shock damage during transport is through use of Bassick's "Floating-Hub" shock absorbing casters and wheels. Write for new "Floating-Hub" catalog FH-53.



New 20-mph caster.

Modernize with Bassick

Your Bassick industrial distributor is the man to see for facts and figures on the most up-to-date line of shock-absorbing and conventional casters. Or you can write to Bassick direct.



THE BASSICK COMPANY
Bridgeport 2, Conn.
In Canada:
Belleville, Ont.

Bassick A DIVISION OF STEWART SW WARNER

MAKING MORE KINDS OF CASTERS... MAKING CASTERS DO MORE

75 YEARS OF CASTER LEADERSHIP

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A paper towel that falls apart when wet means you'll need two or more for a satisfactory drying job . . . and that means uneconomical cost-in-use to you!

But Controlled Wet Strength keeps Fort Howard Plyfold towels strong and firm when wet, without sacrificing softness or absorbency . . . so *one* Fort Howard Plyfold lasts longer, dries better! And that's in addition to Stabilized Absorbency for effective drying power regardless of towel age, and Acid Free Paper for kindness to skin.

There's a Fort Howard Folded Towel in a grade or fold to fill your present cabinet equipment with superior towel performance at genuinely economical cost . . . so call your Fort Howard distributor salesman today!

BECAUSE CONTROLLED WET STRENGTH KEEPS

pure white

Fort Howard Paper Towels

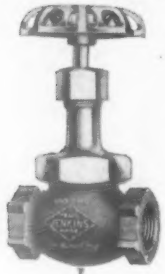
STRONG AND FIRM WHEN WET!

For 35 Years Manufacturers of
Quality Towels, Toilet Tissue and Paper Napkins



FORT HOWARD PAPER COMPANY
Green Bay, Wisconsin

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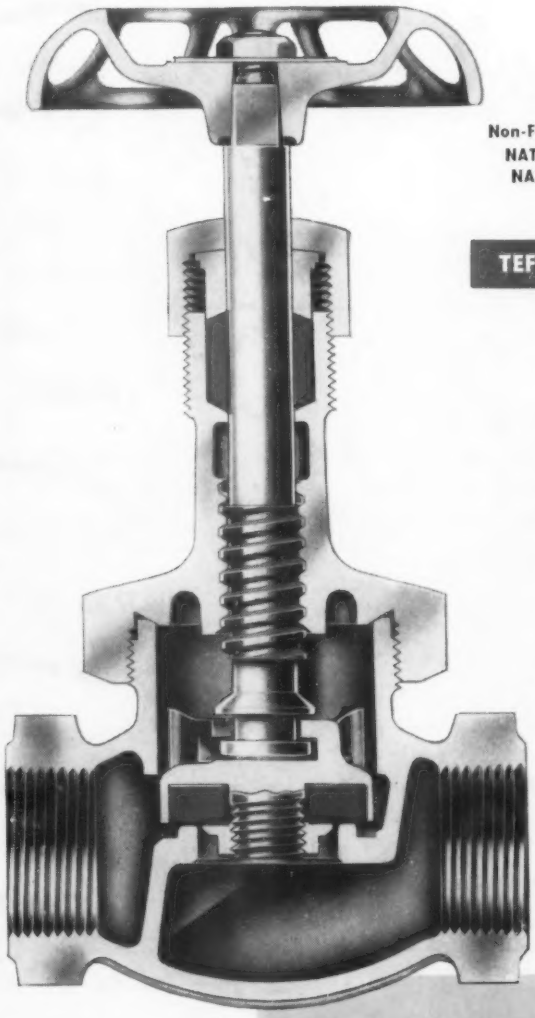
This "Hospital Valve" for OXYGEN now serves many industrial needs . . .

JENKINS Fig. 504 Bronze Globe with TEFLON disc and packing

Jenkins Fig. 504 was designed for the critical requirements of controlling oxygen, nitrous oxide, or any non-flammable gases in hospital services. Industry was quick to note its unique advantages, and it is now frequently specified for systems carrying gaseous fluids for heating, cooling, lighting, and processing, where pressure does not exceed 400 psi, or temperature a maximum of 150° F.

Fitted and tested to comply fully with all Association specifications for hospital services, Fig. 504 has the "extra value" construction throughout that is assured by Jenkins quality standards.

Get details — find out how Fig. 504 can improve efficiency and economy in your hookups for critical service. It's another example of the broad range of "valves for every service" in Jenkins' complete line.



Complies fully with "Standards for Non-Flammable Medical Gas Systems" of—
NATIONAL FIRE PROTECTION ASSOCIATION
NATIONAL BOARD OF FIRE UNDERWRITERS
AMERICAN HOSPITAL ASSOCIATION

TEFLON Disc and Packing

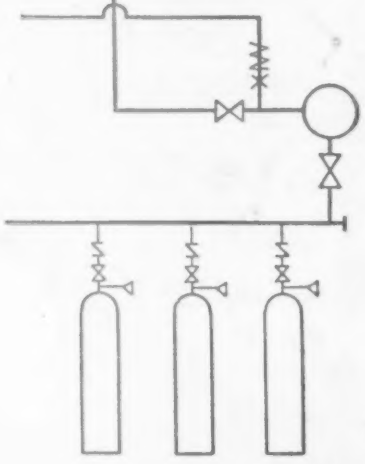
DuPont "Teflon" is a tough, "waxy" inert solid, gray-white in color, tasteless and odorless, non-adhesive and frictionless. Teflon's high resilience assures perfect contact of disc with lapped, crowned seat for gastight closure. Packing is one-piece ring of Teflon, provides dependable leak-proof seal with light compression.

Reinforced Body Casting
High strength bronze body is ribbed along bottom centerline providing extremely high factor of safety. Guards against distortion from vibration, shock, or pipe strains.

Degreased
All bronze parts are thoroughly degreased before assembly.

Polished Spindle
Alloy bronze spindle is polished to permit easy turning and assure leak-proof seal.

Sizes
— ¼" to 2" — 400 lb. O.W.G.



GET COMPLETE INFORMATION from your Jenkins Valve Distributor, or write: Jenkins Bros., 100 Park Ave., New York 17. Ask for Bulletin 116.

JENKINS VALVES

LOOK FOR THE JENKINS DIAMOND

SINCE 1864 TRADE JENKINS MARK

Jenkins Bros

SOLD THROUGH LEADING INDUSTRIAL DISTRIBUTORS EVERYWHERE